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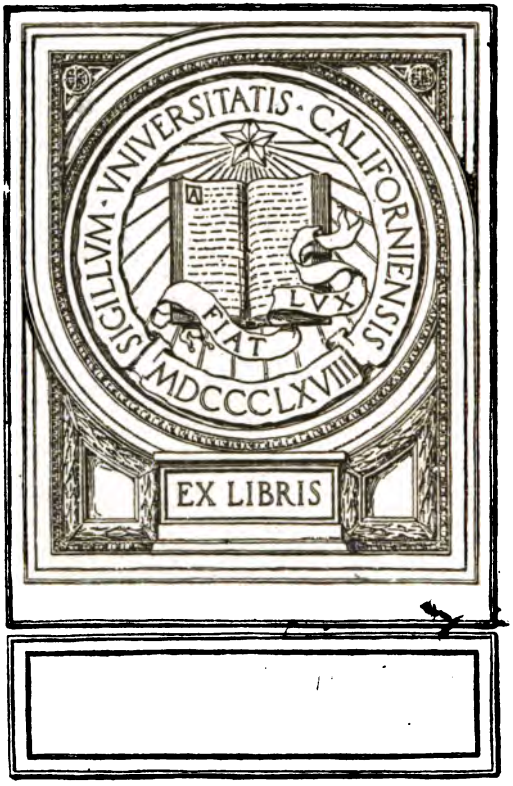
WE AND OUR CHILDREN

WOODS HUTCHINSON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WE AND OUR CHILDREN

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BY

WOODS HUTCHINSON, A. M., M. D.

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INTRODUCTION

THIS world is a nursery, not merely for immortal souls, but for flesh and blood babies. Growth is its business, growth the only thing that it insists upon. After we have done our own growing, our chief excuse for further existence is to make our babies grow. Grown-ups could get along in tree-tops and in caves, but for the shelter of the child houses had to be invented. There was only one room in the primitive house and that was the nursery. And the modern one ought to be run on the same plan. Cities, on the other hand, were made to huddle in for shelter against enemies, or to do business in. Now the most urgent demand of thoughtful lovers of their kind is that they should be made places to grow children in. And the community would profit just as much by such a change as the children would. Any place which is not fit to rear a child in is not fit for a man or a woman to live in.

The more thoughtfully we consider our children the more deeply we will benefit ourselves. That one phrase, "and a little child shall lead them," sums up the millennium. The child not only has

a right to the best that is in us, but will bring out the best that is in us. The race has made us what we are — the child is the embodiment of the race, and the debt that we owe to the race we pay to him. The highest debt, the most sacred obligation that any community owes, is to its children. If business interests must suffer in order that the child may be provided with pure food, then they must suffer. If the growth of our cities will be interfered with by insistence upon playgrounds and breathing spaces and well-lighted houses and homes, then it must be interfered with. No matter what tax upon property is necessary to provide schoolhouses and parks and playgrounds, and a fair start in life for every child, it must bear it.

After all, these things are but the small dust of the balance compared with the child. It was the child, in fact, and his care, that started us upward from savagery and has kept us from falling back into it ever since. Only in educating and training and improving its children can the race educate and train itself. All honour to old age and to authority, but it is the honour paid the child and the mother that stamps the rank of a civilization! Not only what the race will be in the next generation, but what it is in the present, depends upon its treatment of its children. Run your house in the interests of your children, run your business and see that every-

body else runs his business in the interests of your children. Run your politics and your government in the interests of your children, and the world will become a Utopia within three generations. No sacrifice is too great to make, no sum too large to demand, for the proper and intelligent care of children. That class of investments will return fifty per cent. every year, good or bad.

The supreme test of a civilization is the sort of men and women it breeds, and the time to influence men and women for better or for worse is in childhood. It costs far more to raise and educate a child than it used to; but if we are getting a better child for our money, it is money well spent. What else are we here for?

And we must spend more than money on our children — we must spend ourselves and our time. It is not enough simply to provide a good house and plenty of food and substantial clothing.

It is a particularly good thing for a child to have two parents, one of each kind. We fathers are too apt to echo piously the Hindu proverb: "God could not be everywhere, so he made mothers," and consider that we have done our duty when we have provided a place and means for our wives to take care of our children. Not only do we regard it as a waste of time to take an hour or a half day from our Sacred Business and devote it to the personal care of our children, but we have even come to feel

that it is undignified, almost unmanly, to play nurse maid to our own children in public.

By common consent we place the defence of our country and the call of her needs above all personal and financial interests, no matter how weighty and grave. We ought equally to recognize our duty to the race, as embodied in our children, as taking precedence over anything and everything else. Of course we work and slave largely that we may be able to give certain advantages and a good start to our children. But in so doing we may be easily robbing them of things far more valuable than anything that can be bought with money. We should plan our engagements so as to devote a part of every day and a day or more out of every week to our children as regularly and as religiously as we do to our business, our committees, or our clubs. If this should involve a complete recasting and rearranging of our hours of work and days of work in the week, so much the better. It would profit business and the business man, work and the worker, almost as much as it would the child. A child has just as much right to and need of his father's companionship and help and influence as his mother's.

WE AND OUR CHILDREN

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CHAPTER I

BEFORE THE LITTLE ONE COMES

WHEN the new life has begun there follows a period of brooding and expectancy which is one of the most sacred in the life of woman. Superstition and stupidity have done their best to fill this time, naturally and normally one of the safest and happiest in nature, with fears and forebodings, but nowhere is nature more absolutely to be trusted. So great is her tenderness for the new life that the older life becomes of secondary importance. Short of absolute starvation, serious infectious disease, or severe accident, little or nothing that happens to the mother will have any serious effect in disturbing the growth of the child. The extent to which nature can keep the coming life in a watertight compartment, as it were, shut off from the rest of the body fluids and tissues, is something marvellous. Even in such an extreme case as that of a mother in an advanced stage of consumption, not only will the child be born in surprisingly good condition, but the progress of the dread disease in the mother will be temporarily arrested — only to rush on, however, with cataract-

like headway after birth has occurred. It is a commonplace of vital statistics that expectant mothers have a distinct and noticeably lower susceptibility to the attack of infectious diseases, with the single exception perhaps of small pox, than have other women in the community of their age and class, and that when they are attacked they resist them exceedingly well, unless violent enough to cause the death of the new life.

Of course with the double strain thrown upon her blood-purifying organs comes a slightly greater liability to disturbances of the liver and kidneys, but this is more than offset by the lessened susceptibility to infectious diseases, and in the decided majority of instances maternity is accompanied by improved nutrition and a lower death and disease rate.

Due probably to this overloading of the blood with waste poisons there is in mothers of either excitable or depressed nervous temperaments some tendency to an exaggeration of these mental states, but even this is far less common than is popularly supposed. While the bearing of a new life is a grave and weighty undertaking, which should be by no means entered into lightly and recklessly, involving serious, and often distressing, strains upon patience and endurance, much suffering, and some risk of life, so that every woman who goes through it has placed the race under a lasting debt of grat-

itude to her, yet so perfectly has nature surrounded it with safeguards that the chances are at least twenty to one in favour of a happy issue for all parties concerned, and the actual mortality of married women during the childbearing period is no higher than that of spinsters of the same age.

The only thing necessary for the most anxious and conscientious mother to do is to lead a healthy, normal, happy life *with as little departure as possible from her former habits*, unless these were unwholesome or unsanitary. At no time is it more desirable that as much of the day and night should be spent in the open air as possible, and instead of neglecting her exercise she should be most scrupulous to keep all her muscular activities at a high level, and maintain that level just as long as circumstances will permit. It is well, of course, to avoid exercises or sports involving severe physical strains, or risk of falls and such injuries, but it is far better and safer to err on the side of too much open air life and exercise than too little, for it will mean a happier and more normal ending, and a healthier and more vigorous child.

Many women seriously impair their health, and add to the discomforts and distresses of the situation, by shutting themselves up too much indoors and taking little or no exercise. Above all, no woman should be for a moment deterred from going about with absolute freedom and without

hesitancy wherever she wishes, and wherever the needs of her health, or her family duties, or social affairs require, by any fear of possible comment or from a false sense of modesty. The growth of a new life is far too high and serious and important a matter to society and to the race to be interfered with for a moment by ridiculous and, indeed, immoral and indecent conventions and trivialities of this sort. Motherhood has undisputed right of way over anything and everything else in this world, and every true man, every true woman, will gladly recognize that right wherever exercised.

As for the popular fears that the child may possibly be affected or "marked" in some way by anything that the mother may see at this period, or any unpleasant impressions which are made upon her mind, these are nothing but the purest superstitions and fairy tales, which belong in the same mental ash barrel with the Headless Horseman and the Hundred League Boots. Of course every Wise Woman, every ancient Mother in Israel, can tell you of a dozen instances where such portentous calamities have happened, but to every one who has given them the slightest serious investigation they are simply a laughing stock. All the so-called marks and imitative deformities are now known to be due to natural causes, arrests of development from causes working in the child's own body, and having absolutely no connection with anything

outside of it. They occur just as frequently in the children of women who have never been frightened or shocked or "impressed" as in those who have; and now that we are able to tell with precision from our knowledge of prenatal development, the month, and even, in many cases, the week in which they took place, in every case investigated this has been found to be anywhere from three to six months before the shock or the fright which is alleged to have caused them. In fact we know now that ninety per cent. of all these changes occur before the end of the third month, while the shocks and frights seldom occur before the fifth to the eighth.

Nothing that a woman says or hears, no mental or emotional impression that she receives, can affect the unborn child in any appreciable way—nothing, in fact, that she can experience, except the serious physical injuries, starvation, infections or accidents which we have already mentioned. Although arrests of development, and congenital defects, have attracted an immense amount of attention on account of their strangeness, and of the eager way in which rumour and fairy tale have been busy with them, yet in point of actual frequency they are among the rarest curiosities of medicine, and occur only once or twice in a thousand births.

With the double demand upon her powers of nutrition the appetitie of the mother usually in-

creases, and while in nine cases out of ten this increase is along perfectly wholesome and healthful lines, occasionally it will take the form of curious and somewhat unusual cravings for particular articles of food. There is very seldom any dietetic harm in any of these whims, in fact in many instances they tend to fill a gap in the dietary, or redress an imperfectly balanced ration, and unless they call for something positively injurious it is usually best to gratify them. But imagination has been busy again with these trifling and rare eccentricities and magnified them into factors of most baleful influence upon the future of the child. This was perhaps natural enough for primitive man, who never could understand the mystery of birth and consequently surrounded it with an atmosphere of legend and myth, much of which survives at the present day. These are, however, as arrant fairy tales as were ever crooned over camp fires, or are told with bated breath by children round the nursery hearth, before the lamps are lit, to-day. No maternal cravings, whether gratified or ungratified, have the slightest effect upon the child.

The diet of the mother should be abundant, nutritious, varied and well cooked. The greatest, I had almost said the only, fault which it can have is to be too scanty. There is neither any kind of food nor class of food which has any injurious effect upon the new life, or is there any other which is

peculiarly good for either mother or child. Any abundant diet which will keep the mother in good health and comfort will provide well for the new life.

Only one factor should be watched with special care, but that only slightly greater than at all other times in life, and that is the scrupulous regularity and fullest activity of all the processes by which waste is eliminated from the body. This will be largely insured by the methods already considered — an abundant and well varied dietary, and plenty of life and exercise in the open air. But it is well at this period to see that the diet is even richer than usual in fresh fruits and fresh vegetables, and that an abundance of liquids — milk, water, lemonade, etc., — is taken, and to promote the activity of the skin by means of exercise to the point of perspiration and by hot baths. The impression occasionally met with that any particular form of diet, for instance, an avoidance of meat, or a large amount of fruit acids, assures an easier culmination of the process, is a pure delusion.

CHAPTER II

BABIES AS BULBS

WHAT is a baby for if not to be played with? Everybody loves a baby, but he certainly needs to be protected from his friends at times. We have been studying the child most industriously and enthusiastically for a decade or two, and have discovered that, assiduous and sleepless as the care is that he requires at times, at certain stages and at frequent intervals what he most needs is wholesome neglect. Give him a little chance to live his own life; to fulfil his destiny.

Our earliest attitude toward babies is and always has been a singularly mixed one, alternating between states of delighted astonishment and absolute panic. At one moment we treat them as if they were the most amusing playthings, the most ingenious dollies in the world. We joggle them, tickle them, and booh at them, and interpret their signs of astonishment as marks of enjoyment. We show off all their little tricks to every admiring visitor. We do everything short of taking them to pieces to "see how the wheels go wound." At other times we are firmly convinced that unless we

are strictly "on the job" day and night they will stop growing. Unless we keep them properly dressed, bandaged and packed, they will grow crooked or lop-sided.

I have sometimes thought, as I have watched the unrolling from its clothes-cocoon of a very new baby, and marvelled at the layer after layer of flannel which had to be peeled off before you could get down to the baby at all, that the beliefs of the old-fashioned mother about the ability of a baby to hold its limbs together and grow them straight without assistance must be much the same as the view of the small boy upon the function of a cat's tail: "Cats have long curly tails which they wrap around their feet when they sit down. I no a cat that had no tale and it was afraid to sit down in public for fear its feet would skatter." I really do not know how else the swaddling bands and ridiculous trailing skirts of the past generation of babies could otherwise be accounted for.

These things, however, have largely now passed into history with the head-board of the papoose to flatten his forehead, and the back-board of his basket to keep his spine straight. But we are still almost as worried and as interferingly officious about his mind and his faculties as we were formerly about his body and limbs. We insist upon startling him or waving objects before his eyes to see if he will "take notice." We apply a variety of approved

tests to see if he has right sense. We anxiously endeavour to get him to "recognize" us; and are greatly distressed if we cannot get him to grin in response to our gurgles, clicks and pokings in the ribs. All these are not only of no benefit to the unfortunate scrap of humanity, but a distinct distraction from the important and absorbing business which occupies him completely — that of growing up. He would much prefer to devote himself exclusively to this if we would only let him; but we generally won't unless he is goaded to manifest his disapproval by unmistakable squalls.

A masterly inactivity is the hardest of all policies to pursue. It is far easier to do something right away quick, and to repeat the performance every ten minutes. It is really hard to believe that that tiny bundle of human possibilities which we call a baby will ever succeed in growing into a man unless we exert ourselves to the utmost during the entire process. Active and strenuous assistance from us is the only thing that can save him. Yet few impressions can be farther from the fact. Nature requires us to provide the raw materials of the process, in the shape of food, warmth, and as little clothing as possible; but she and the baby will do all the working of it into the finished product with very little assistance from us. Indeed, what she would be most grateful for is a free hand and no "butting in" at the wrong time.

The first lesson in regard to his food supply is significant and should be taken to heart. As it is now well known, he comes into the world "loaded," and needs no supply from external sources for the first three days. Indeed, he is much better off without it. He has all he can do to sleep and learn to breathe and get accustomed to that new and troublesome influence, light. If we have the self-control to refrain from forcing anything into his unwilling mouth, excepting an occasional teaspoonful of water, we have lost our best chance of starting him off as a colicky baby. For the next two or three weeks we ought not to expect any more signs of intelligence or active interest in anything than from a healthy onion. And he won't make much more noise than the latter if he is properly handled.

The idea that babies squall by nature as a matter of habit or out of pure "cussedness" is both a delusion and a base slander on the baby. Not even a pig will squeal when he gets enough to eat and at sufficiently frequent intervals. And a farmer who should hear his cherished hogs squealing in their fattening pens would promptly "call down" the hired man whose duty it was to feed them. Whenever a baby squalls, it is some grown-up's fault. He does not want very much at a time, but he does like it regularly. And when you have once, by a little careful observation, "struck his gait" as to amount and frequency — about two ounces every

two hours is a fair average to begin with — then his little life will be one peaceful sequence of eating and sleeping, sleeping and eating, but all the time growing with as little fuss or disturbance as a tulip makes when it is pushing up its green pencil through the brown earth.

Joggling and rocking and jiggling up and down as provocatives of slumber are not only unnecessary but absurd. No healthy child needs to be quieted or put to sleep. If he isn't either quiet or asleep, there is something wrong with him. Most procedures that we inflict upon unfortunate infants to put them to sleep would have anything but a soothing effect if applied to us. When a baby does go to sleep under some of them, it must be in self-defence in order to get them to stop. Certainly this would apply to many of the lullabies that are inflicted upon the helpless morsels. How would we like to be joggled for three quarters of an hour steadily just after a heavy dinner? When the joggling has produced its natural Atlantic Liner effect, this of course leaves a vacancy to be filled, then more joggling until another Jonah performance occurs, and so on literally *ad nauseam*.

Remember that the normal state of a healthy baby for the first three months is not wakefulness, but sleep. The only thing that he thinks it worth while to wake up for is the absorption of nutriment; and when he has once successfully surrounded this,

he is not going to waste any time in staying awake. If, however, he does want to stay awake for a little while out of pure good nature and good fellowship, by all means let him. He will go to sleep in the end just as inevitably as water will run down hill. There is no more need for your taking the personal responsibility of putting him to sleep than there is of seeing that darkness follows sunset. On the other hand, when he is once asleep, he should never be awakened for anything short of the house being on fire.

It is most important to get him into regular habits, but it should be his kind of regularity and not yours. He is no railroad train that reaches an eating station on schedule time, just every two hours. They did not know anything about clocks where he came from. But he has a natural self-acting dinner gong in his little interior which serves his purposes excellently and will rise to the potency of a fog horn or a fire alarm if you do not pay attention to it promptly. His idea of regularity is a nicely balanced rhythm of sleeping till he is hungry and then feeding till he is sleepy, with a fine disregard for the hands of the clock and even for the difference between day and night. As his fuel box is limited in size and the degree of concentration of the fuel administered does not vary much, it will take him just about so long to burn up each charge, so that he will tap the gong at pretty reg-

ular intervals. But there will be nothing machine-like about this regularity. If he should awake fifteen minutes before the sacred hour, and show by unmistakable minor signs that he is ready for business, feed him at once. He should never be allowed to go to the length of crying. To cry is a signal of distress, and a baby that cries much has been unlucky in its parents or its nurse.

The idea that babies cry to expand their lungs or to develop their voices is a nurse's yarn. A child that never cries is as healthy and as happy as a nation that has no history. If he happens to sleep on past the precise hour, do not wake him on any account. So long as he sleeps it is a sign that he has got plenty of fuel under his boiler and water in it, and is growing like a weed. All the growth processes and the construction activities of the body are most active in sleep. It is the spending and the down-breaking processes that are dominant when we are awake. We take in food while we are awake, but we utilize it chiefly while we are asleep. Do not be afraid to give your little human dormouse plenty of leeway in regard to his hours of waking.

Some people seem to have the mechanical, salvation-depends-upon-it kind of idea of regularity of the old lady who was travelling down the Hudson Valley. No sooner had she boarded the train than she began to show great uneasiness for fear she would not know when she got to Poughkeepsie.

She made both the conductor and the brakeman promise that they would be sure to tell her when she arrived there; and when the time approached, kept asking at every other station if this were not Poughkeepsie. The conductor promised her solemnly that he would not let her be carried past. But just before they got to Poughkeepsie they had to lay off for another train, and then hurry past to the next junction to catch up with the schedule, with several other complications added. So that in the hurry and bustle of the moment he was nearly a quarter of a mile past Poughkeepsie before he thought of the old lady. So mortified was he at the idea of failing in his promise that he actually pulled the rope and ordered the train backed up again into the station. Then he hurried down the aisle and in his politest manner said: "Here we are, madam. This is Poughkeepsie. Can I help you off with your valise?" "Oh, no! Thank you ever so much. I am not going to get off at Poughkeepsie. I am not going to get off at all; but the doctor told me I was to take a pill when I got to Poughkeepsie."

This kind of punctuality is not necessary with the baby. But if he is allowed to follow his own sweet will and drink himself to sleep and sleep himself awake on his own schedule, he will be so regular you will hardly know he is on earth. Indeed, I have actually known of a family who lived

next door to a house where a baby was being brought up on this vegetable plan, who indignantly refused to believe that there was a baby in that house at all, as they had never heard even a whimper in the daytime, or seen lights in the windows or signs of sentry duty in the dead of night.

Another thing we must learn to appreciate and respect in the baby is his attitude toward light. This is widely different from ours. Light is one of the most stimulating and attractive things in the world to us, and the brighter the better. Witness the glitter of the Gin Palace and the blaze of Coney Island. But to a poor blinking tot of a baby it is as dazzling and irritating as it is grateful to us. His chief objection to the new world in which he finds himself, if he could put it in words, would be: "It's so beastly light." He is born a cave-man in more senses than one. While the rooms which he occupies should get plenty of sunshine, this should never be allowed to fall directly into his eyes or full upon his face. He has neither pigment in his tender skin nor hair on the top of his pink little head to protect him against the light rays; and it is little short of "cruelty to animals" to lay an unfortunate baby on his back in a trough-like perambulator or baby buggy so deep and so well padded that he cannot even squirm, load him down with clothing and wraps, or even actually strap him down, so that he can lift neither hand nor

foot, and then wheel him about for hours with his little face turned up to the full glare of the light and even the direct rays of the sun. Here is where the foundation of many a case of headache, of irritable nerves, of fretfulness with its accompanying indigestion and sleeplessness is laid. Look at the faces of these poor little human cocoons and you will see, three times out of five, that while they are bravely trying to make the best of it and accept it good humouredly, their tiny countenances are wrinkled into one universal frown of perplexity and protest.

By all means get the baby into the open air, day and night; but see to it that his eyes are protected from the direct glare of the light, either by hood or sunshade, or by turning his back to it.

It is also important to bear in mind this attitude toward light in another field, and that is the attracting of the child's attention. While a baby, after the first few weeks, when awake will follow with his eyes any bright or rapidly moving object and a little later clutch at it with his hands as instinctively as a troutlet will snap at a fly, yet a very few repetitions of this movement are sufficient to tire him. A multiplicity of high lights in the picture presented to him or rapid movements before his face quickly dazzle and confuse him and get on his little nerves. He must be regarded as much in the position of a man who has been imprisoned in

a half underground dungeon for weeks and then suddenly brought out into the full glare of the sunlight. He literally sees men as trees walking. The whole of his surroundings are one dazzling, shifting kaleidoscope of colours and lights, and it is only by the slowest and most gradual degrees that he picks out here a feature and there a detail until it becomes an intelligible whole to him. He gets three times as many flashes and shocks and stimuli from his environment at the best and quietest as he is able to make any use of. And to add to this confusion by dangling things in front of his eyes or inane snappings of fingers or chuckling of "pretty, pretty," in order to make him sit up and take notice is simply a worse confounding of confusion.

Let the baby alone until he is ready to take the initiative in wanting to play with you, which he surely will in his own good time. If adoring relatives or conscientiously polite visitors wish to admire the baby, they must learn to do so while he is asleep. It will be far better and easier for all parties concerned. The all too prevalent habit of trying to get the baby to recognize somebody whom he does not and cannot know from the proverbial hole in the ground — since he is unable as yet even to conceive of his existence — or to respond in some way to a particular gurgle or tickle under the chin is about as irrational as our childish habit of digging up seeds every two or three days after

we had planted them, to see if they were growing. You need not be a bit afraid but that his brain will develop all right even though he takes no more notice of you or his surroundings than a potato sprout. As *your* child he is perfectly safe to show at least some signs of intelligence sooner or later if you will only give him time.

This is not by any means to hold that babies should not be dandled and petted and played with. The instinct to do this is one of the dearest of the mother-heart, and like all instincts has a sound rational basis. When the child is ready to be chirped at and tickled and jumped up and down, when he himself invites you to a game of play, then play and petting are meat and drink to him, and what he needs above everything else. No child can grow up healthy, natural and human without lots of love and affection and admiring regard. What babies in foundlings' homes and hospitals feel most of all is the lack of petting and mothering. Only those who are bright and winning enough to attract attention and to awaken affection in their attendants are able to avoid growing up listless and colourless and dreary. You cannot possibly be too proud or too fond of your baby. But for heaven's sake do not kill him with kindness. And try to get his point of view. The important thing is to make him happy and healthy, not to amuse yourself, or gratify your pride of possession and dis-

play. When he wants to be quiet, let him be quiet, and when he wants to romp and play, play with him. It will save nerve fag for both of you. To know when to let well enough alone is half the secret of success and happiness.

Of course the baby's bed should be large and firm enough for a playground. To bury a helpless infant in a boggy trough of a cot, or basket, or baby-buggy, where he has hardly room even to squirm, and can only lie stiffly on his back with his nose and his toes toward the ceiling, like a mummy or a stone crusader on a tomb, is little short of cruelty. His cot should have a mattress, not a pulpy feather bed, soft but firm enough to stay flat, and wide enough to allow him to roll about half a yard in every direction. He should be frequently laid down on his side, and as soon as he is able allowed to kick himself over on to either side, or even on his face, to sleep.

His clothing should be loose enough and sufficiently "divided" — skirts and petticoats are an abomination *everywhere* and most of all on a baby — to permit him to kick every limb he's got to any point of the compass — and to all four at once if he wishes — to shake hands with his feet, or bring his toes up in front of his face for investigation.

If he can't change his position quick enough to suit him, help him, and let him sit up whenever he shows an ambition in that direction. Rub and

pat his little back occasionally — so long as he audibly expresses his approval it's all right, but don't throw him over your shoulder like a sack of flour, or hang him face downward across your knee and beat a drum-call on his back, "to get the wind off his stomach.'

If he has been properly fed and handled there'll be no wind there. If he hasn't, it's little use to half-joggle, half-hypnotize him into unconsciousness by making him dizzy and drowsy.

CHAPTER III

THE NURSERY AGE

THE natural state and tendency of matter is not rest, but movement in a right line. If it be stationary it is only so held by the pull of opposing force. If this be true of what we term "dead" matter, how much more so must it be of living. That little pink bunch of folded human rose leaves which we call a baby, soft and tiny and feeble as it seems, is in reality charged to bursting with elemental force, and is determined to grow as surely and as irresistibly as the planet whirls in its orbit. All we have to do is to provide the simple necessary surroundings and nature will do the rest. Even babies do not die of themselves, but from definite cause, preventable nine times out of ten. If the triumphant swing of their tiny life impulse be brought to a standstill this is not by failure from within but by interference or by resistance from without, which it is our business and usually within our power to prevent. Some of this prevention must begin, in Oliver Wendell Holmes's witty phrase, "with the grandparents," or at least with the parents.

We hear much of the inalienable rights of man, but too little of the rights of the child. Chief and most fundamental of all is the right to be well born. From a biological point of view one of the greatest if not the greatest of all crimes is to bring into the world, or permit to be brought into the world, a child underfed, diseased, defective, handicapped in any way for life. No act which prevents this will stand as a crime ultimately in the conscience of the race, no matter what church or state may say with their purblind intelligence and antiquated morals. We hear much from pulpit and bench alike of the sin of failing to produce our kind, but too little of its alternative, the sin of bringing into the world children who are physically, mentally, or morally crippled from birth, an offence not less against the child than the community and which must be shouldered as a counterbalance by the upholders of "until death do us part," or the denouncers of attempts to control fertility. Two thirds our failures in every class of life, of our paupers and our criminals, are the offspring of parents who ought never to have been permitted to marry at all, or divorced as soon as one found the other out!

Fortunately the birthright of good breeding, the proud privilege of being well born, is, like most things worth having, fairly common. Even with the lamentable carelessness, not to say recklessness, displayed by children in choosing their parents, nine

tenths, yes, ninety-five per cent., of them are born with all the possibilities of full manhood and true womanhood, of the greatest things and highest accomplishments ever yet invented wrapped up in the heart of their little body buds. There is scarcely a limit to the shipwreck which our own folly of perversity may work upon our own bodies, but when it comes to passing on these masterpieces of disaster to our children, Nature puts her foot down like a thousand-ton granite bowlder. Our bodies, with what we are pleased to term our minds, are simply appendages, creatures of a little island of brood-stuff embedded in the midst of them, which, though the myriads of successive bodies which sheltered it have died and returned to dust, has itself been alive and triumphant, untouched by decay, undimmed by time, since the dawn of the world. We inherit an entailed estate which we pass on to our children as we have received it from our fathers. We have only the spending of the interest, and only by most fiendish ingenuity can impair the principal. The torch of life which we hand on is the same which has been passed down to us from hand to hand through all the ages. Its light it is which flickers in the eye and glows in the cheek of the baby in its cradle. Nature has been planning for ten million years to make your baby a success; nobody can prevent her except yourself

The best policy in baby raising is one of a sleepless and masterly inactivity. The first, last and always most important thing to be done is to watch the baby, the second is to *watch the baby*, and the third is to WATCH THE BABY. Remember, instead of being younger, he is twenty to thirty years older than you are, for you have both been alive since the dawn of time and the wisdom of Nature was not exhausted when you were born.

When it first appears in the light of day, the tip of the sprout of our tiny human plantlet, euphemistically termed its face, is neither affable in its expression nor (if I am assured of police protection) attractive. In fact, if he were twenty years older we should say he had "a grouch" and wanted nothing so much as to be let alone. His evident and absorbing desire is to shut his eyes, open his mouth and take what Nature sends him, and then go to sleep again till next time. For heaven's sake let him! If a baby's eyes come open oftener than his mouth does in the first week of his existence, it is a bad sign. He is geared to sleep twenty-three hours out of the twenty-four and to grow every minute that he sleeps. Why should he waste any time staying awake, even to have you decide the absorbing question as to just what colour his eyes are, or how many fingers and toes he has, or whether he looks most like his father or his mother; especially as the eyes of all new babies are, like those of puppies

and kittens, exactly the same colour — that of a slate pencil. By a perpetual miracle which never loses its wondrousness, they have exactly ten fingers and a like number of toes, whether they are ever counted or not. And — if their mothers are safely out of hearing — they all look exactly alike; and their adorable little crumple of features resembles no other living human being except themselves, or any other baby born the same day. They may be just as eager for the centre of the limelight as anybody in forty years' time, but all they want now is shade and moisture and warmth, and lots of them.

For the first three weeks of his existence he does not know that he has anything but a mouth, and nobody else should either. All openings of that rosy portal should be exclusively for that which entereth into, not that which proceedeth forth from, it. A healthy baby his first half month should scarcely make much more noise than a potato and should be treated like one, planted in a warm sunny spot, watered well, and disturbed as little as possible. When he wants anything he will wake up and mention it, but only just loud enough for you to notice it, unless you are inattentive enough to require him to repeat his remark. Then you will think that you have got in the track of an ambulance; but this will seldom happen if you are politely attentive to his first suggestion. A baby never

cries just to expand his lungs, or to hear himself talk. These little weaknesses are of much later growth in the age of oratory and voice culture.

The first danger signal in the nursery is wakefulness, especially if combined with restlessness; and the second is noise. It is as bad a sign for a baby under a month old to be awake much of the daytime as it is for a grown-up to be awake much of the night. We hardly realize how closely and inseparably connected sleep and growth are. We work while we are awake, but we *grow* while we are asleep. We earn our money in the daytime, but spend it at night in infancy — as sometimes in adult life. When we are doubling our weight every eight months in babyhood we sleep eighteen to twenty hours a day. As long as we can sleep ten or more hours a day we continue to grow. When we reach the dead line of nine hours our growth stops; and when we fall to eight, seven or six, each hour marks a step on our descent into the valley of the shadow. A baby is the visible embodiment of "rosy sleep," and anything that murders sleep is death to him. But don't imagine that because he sleeps so much he does not need much to eat. He sleeps so that he can devote his undisturbed attention to the business of growth, and such a success does he make of his business that he grows five times as fast as he ever will again, and requires three times as much food in porportion to his body

weight as you do, or nearly one fourth as much as a full grown man. Almost the only thing that will make him wakeful or noisy is hunger, either because he does not get enough food, or because what he gets is not digestible.

This huge food intake and body building that he is doing with it mean two other things which it is most important to remember — that like an engine at full speed he is giving off a huge amount of heat and requires an abundant supply of air for draught purposes. Why should we be so anxious to keep the baby warm and so fearful that he will get chilled when he is manufacturing nearly twice as much heat in proportion to his weight as we are? The explanation is simple: He has so much more surface in proportion to his bulk, he is literally like Miles Standish—

> A little chimney
> Heated hot in a minute

and as quickly cooled. The way to keep a baby warm, then, is not to overheat the room, but to keep his body well covered. Only do that and you will find him a perfect little furnace. But, like any other furnace, if he is going to keep up a hot fire he must have an open draught, so whatever you do don't cover his face or you will "chill" him, precisely as you would a stove by shutting the draught and turning down the damper.

There is absolutely no danger of a baby's "catching cold" by the exposure of its face or through its nose unless the air that it has to breath contains germs, or gases, or dust. Babies are exceedingly sensitive to foul or overheated air, not in the least so to cool, fresh air. Keep the nursery windows open toward Jerusalem or any other place, day and night, and if by so doing you make the room too cool to be comfortable for the old nurse and the neighbourhood busybody, so much the better! You cannot give a baby too much fresh air; if he has plenty of fuel under his boilers he will turn half of it into heat. After the first two weeks his daytime sleeps should be taken in the open air in some sheltered, sunny spot so long as the temperature is above freezing. The open air treatment is now relied upon for sick babies more than any other one thing except pure milk.

Not only are tiny, shrivelled, hollow-eyed mortals with summer diarrhœa taken right out under the trees if possible and kept there day and night, but even wheezing little gaspers in the last struggle with pneumonia and bronchitis are carried right out, cots and all, on to the roofs of the hospitals, even where the snow has to be swept out of the way and banked up on both sides of them — not to "catch their death of cold," but to recover after they have been given up to die in the wards below. Babies are little clouds of water gas shot through and through

with sunlight and whizzing with the pulse of the southwest wind; they revel in the sunshine and dance with the wind, and fade and die if they are cut off from either. Yet we bury them in deep coffin-like cradles, imprison them in air-tight, overheated rooms poisoned by our breaths, and when we at last venture to let them take the air in half hourly doses, when they should be getting it twenty-five hours out of the twenty-four, we wrap and swaddle and swathe them as if they were Egyptian mummies. Time and again when I have seen babies brought into the clinic or consulting room, and have watched the process of unrolling and peeling off of the cocoon-like wrappings, I have wondered when we were going to come down to the real baby and marvelled at the powers of infant endurance. If we were to be swathed and wrapped so that we could scarcely move hand or foot, and then either gripped with arms of steel immovable against the ribs of some fifteen hundred pound giantess, or dropped into a deep trough lined with stifling padding, and covered with a lid made of two mattresses, one feather bed and an eiderdown quilt, for all the world like a blackbird in a pie, we would think we were buried alive and fight for dear life to get out of it. That's what the baby would like to do, but he can't — poor little beggar! And it is even worse for the baby than it would be for us, because a baby is like a frog, not only

that it was hatched under water but that he breathes with every inch of his skin all over the body. It is wrong to cover any part of a baby's body so that it has not merely plenty of room to move but plenty of air to breathe, and it is little short of a crime to cover a baby's face under any circumstances short of zero. Veils and face wraps of all sorts are an abomination, a relic of barbarism and a mark of superstition in infancy — as well as in later life.

All bandages, stomach protectors, indeed garments that touch the body anywhere except loosely at the neck and wrists, should be prohibited in babyhood. It really is not necessary to wrap a baby up tightly for fear he will fall to pieces. During the first few weeks, loose little slips about six inches longer than he is and of the lightest and softest materials, no matter what, are what he needs. The flannel-next-to-the-skin delusion, thank heaven, is melting away after having produced more eczema and prickly heat and general disturbance of the skin in the luckless baby than any other thing in the garment line ever invented since the hair shirts of the hermits. As soon as he begins to outgrow this garment and kick his little pink toes out beyond it, split the lower third of it and put feet on each leg. Make them both as long and as loose as possible just so as to avoid the likelihood of his getting both legs into one of them. Two of

these of light soft material are better than one of heavier, and with a waist cloth should constitute his entire fatigue uniform. For dress parade purposes may be added any number and variety of short cotton, linen or silk frocks of whatever degree of flimsiness and lace trimmings may most appeal to the maternal pride.

When asleep at any temperature above 50 degrees one light, soft, fleecy blanket and one light coverlet made of cheesecloth filled with three or four sheets of surgeon's cotton — not the ordinary cotton batting of the shops — will be abundant for cover, with an additional coverlet in case of a cold night or wind. A baby should of course have his own bed with a soft but firm and springy mattress, firm enough to remain level under his weight and wide enough and long enough so as to give him at least a foot, and better still eighteen inches, of leeway in every direction to travel over in his little wriggling movements. It may be enclosed by a railing to prevent these excursions from going too far, so as to end in a bump. But the bars of this should be only just close enough together to prevent his thrusting his head through and falling out.

For the first few days he has not got accustomed to this dreadfully light new world that he has come into, and should be allowed to keep in the shade most of the time, but always in a well

lighted, well sunned room. No air can be kept pure and fit for human beings unless it is exposed to sunlight frequently. As the shrewd old Italian proverb has it: "Where the sunlight never comes the doctor often does." After exposure to the light of day has coloured his eyes and developed the protective pigment in his little skin he can then be brought more and more into the sunshine, until finally by about the fifth or sixth week he should be out in it for several hours every day, always of course remembering most carefully to see that his eyes and face are protected by a sunshade, or perambulator top, from the direct glare of the sun.

After he is about five weeks old, in addition to being taken outdoors at least twice a day, he should be lifted out of his cot, stripped to his pajamas and laid on a mattress or a bed or on top of a table in the sunlight in front of a window and allowed to kick and wriggle and play with his toes, and bang himself in the nose with his fists to his heart's content. A little later he should be stripped to the "buff" and put through this sun dance at least twice a day — the room of course being kept comfortably warm if the weather be cold; or in summertime the window can be opened or, better still, the mattress be laid out of doors under a tree. Remember it is not necessary to pile clothing or covers upon a baby to keep the cold out. All that is needed is one or two, or at most three, layers to

keep the heat in, which if he is healthy and fed he is pouring out like a young blast-furnace.

Now as to the fuel for our little human auto just starting out on his long-distance endurance run through life. Babies are like fledglings in the nest. The first thing they know how to do is to open their mouths, and though they do not show it so plainly, they are as nearly "all mouth" as the feathered nestlings. Like the nestlings also, no matter what their parents may eat in the way of seeds or grains, bread, butter or potatoes, they are born of the primitive type, carnivorous, and want nothing but meat, living flesh — white and liquid in this case instead of red and solid, but meat nevertheless and *alive*. Starch is about as much use to a new-born baby as finely ground sawdust, for he can digest less than one per cent. of it.

Now where is he to get such a supply of white, liquid protein, still warm and living? Old Mother Nature smiles a tired smile and says: "Why I invented a supply of that sort of material two million years ago and it is still thirty times better than anything else since invented to take its place." And Nature, as usual, is absolutely right. The baby knows what it wants, the mother knows what to give it and has known ever since she was a *creodont* or *Titanothere* in the Jurassic. How overwhelmingly sound both their instincts are may be vividly glimpsed in the cold and gruesome

fact of modern statistics that the death rate in children under one year of age is from ten to forty-five times as great among bottle-fed children as among breast-fed.

We have become so accustomed to the idea of the bottle as a part of the regular furniture of the nursery that it comes with something of a shock to us to realize what a broken reed and source of positive danger it is. Here are the plain brutal facts: In spite of the lightly and even cheerfully accepted delusion that the milk gland is dwindling to disappearance under civilization, or the bottle taking its place, from sixty-five to seventy-five per cent. of all children in all civilized communities are still breast-fed. Two thirds is the conservative estimate — three fourths nearer the truth. Yet the appalling death rate which occurs during the first year of life, the much discussed infant mortality, which averages from fifteen to twenty per cent., counts three fourths of its victims from the bottle-fed one third. In other words, the death rate in bottle-fed children the world over is, on the face of it, three times as great as that in breast-fed. But even this comparison is too favourable to the bottle-fed and is due to the fact that a larger percentage of bottle-fed children is found in the comfortable and well-to-do classes who have corresponding advantages in the way of abundance and purity of food, sanitary surroundings,

intelligent nursing and medical care. When the contrast is made between bottle-fed and breast-fed children of the same social or economic class, then the danger looms up in its true proportions. In the parish of St. Pancras of the 779 children under one year of age dying in 1905, the proportion of the breast-fed dying was 24 per thousand: of the hand-fed 98 per thousand, nearly four times as great. Doctor Robertson found in Birmingham over thirty times as many hand-fed babies died as breast-fed. In Huddersfield it is stated that, before the age of three months, fifteen hand-fed babies die as compared with one breast-fed. In Brighton, Doctor Newsholme, now chief medical adviser of the English government, found that of babies dying from diarrhœa only six and a half per cent. were breast-fed, while eighty per cent. were hand-fed. Other observers report exactly the same findings, and our American infant death rates corroborate these figures save that the proportions are not quite so great.

There is abundant statistical basis for the statement that the baby who can be breast-fed has ten times the chances of survival that he would if he were bottle-fed. It is a most serious responsibility to refuse to nurse a child when even the barest possibility of ability to do so exists.

Observers from all over the civilized world testify to the gratifying fact that in the working

classes as a whole, except those in which the mothers themselves are employed in industrial occupation, and in the rural and small town population generally, from fifty to ninety per cent. of all children are still nourished by Nature's method, the general average being about sixty-five per cent. The lowest percentage is to be found in two social extremes, the very rich, where the mothers are prevented by the pressure of their social duties from attending to such vulgar and insignificant details as the feeding of their own children, and the very poor, where even the mother's wage is needed to keep body and soul together and she has neither the time to nurse her baby nor the food that will make her milk of any value to it if she should. In both of these unfortunate classes, the percentage of breast-fed children may fall as low as fifteen or twenty per cent., but it is only in the latter one that the death rate rises in proportion. A high infant mortality is one of the many "blessednesses" of the poor.

It might at first sight be supposed that much if not all of this decline of natural nutritive power was involuntary and due to inability. But again the figures refute our fears of degeneracy. This question, as becomes its vital importance, has now been taken up by investigators in all parts of the civilized world and in all classes of society with astonishing but most uniform conclusions — viz., that between ninety and ninety-five per cent. of

all human mothers are still abundantly able to nurse their own children if they are willing and if they have the time and the proper feeding to enable them to do so. From Berlin, from Dresden, from Florence, from Paris, from London and Liverpool, from New York and Boston come the cheering returns that in no case has it been found that more than ten per cent. of the mothers in any class of society are unable to nurse their children, and seldom more than five per cent. Not only so, but since within the past five or six years the vital importance of this proceeding has been recognized, physicians at maternity hospitals and at children's clinics all over the world are reporting that, whereas ten years ago only forty, fifty or sixty per cent. of the mothers under their control nursed their children, now seventy, eighty and ninety per cent. do so habitually, with a corresponding reduction of the death rate and sickness rate in the children. The returns are just as favourable from physicians whose practice is among the wealthiest classes in London, Berlin and New York as it is from those in dispensaries and clinics.

The only reason why the modern mother does not nourish her own child is that for various reasons she finds it inconvenient to do so, and not because she has lost the power. First and foremost among these reasons for disinclination is the lamentable delusion that babies can be raised just as well on

cow's milk or some modification of it. When this false premise has once been accepted then any trifling matter of convenience, of indisposition, of pressure of other engagments, of æsthetic considerations will suffice. A singular sense of false modesty often exists in otherwise intelligent and most devoted mothers that the carrying out of the function is something to be ashamed of, something that they do not like the public, or even their intimate friends to suspect that they indulge in, something that, as they frankly express it, "makes them feel like animals." The modern mother is just as devoted to her baby and not only would, but does, sacrifice herself for it with as little hesitation as the mother of any age, but, believing that the baby is just as well off on cow's milk, she has allowed minor and often trivial considerations to divert her from the discharge of her most important duty.

This is hardly to be wondered at, for to most of us milk is milk just as "eggs is eggs." Indeed, it is only since our laboratories have begun their most careful analytical study of cow's milk that we have begun to realize its enormous differences from *real* baby's food. It ought to have been sufficient to remember that one milk has been fitted for hundreds of thousands of years to grow a calf, the other to grow a baby. That, for instance, while the human baby grows about fifty per cent. bigger during the first six months of his little life, the

bovine baby grows nearly five hundred per cent. in the same time. Nature would be a fool if she provided the same kind of food for both. As a matter of fact, as we should have expected, the two milks vary nearly one hundred per cent. in every respect, except the fat. It is of course impossible to enter into the details, but fortunately it is not necessary. It may be roughly summed up in two statements: First, that the protein or "meat" of cow's milk is double that of human milk and the proportion of it which is in the form of tough, indigestible *casein* (literally "*cheesein*," from the Latin word of that meaning) is nearly six times as great. This is why it makes such a tough, hard, indigestible curd in the unfortunate baby's stomach, which is not in the least fitted to digest it. No amount of dilution or modification will overcome this radical defect. Incidentally, the sugar in cow's milk is only half the required amount for a baby, so that in proportion as you get the protein right by diluting, you get the sugar wrong, but this can be remedied by adding milk-sugar.

The other general statement is more fundamental yet — that every single ingredient of the cow's milk is wrong for the baby's stomach; its protein is bovine protein, its fat is bovine fat, more like suet than the delicate human fat required; its salts are of the kind and in the proportions required for a calf instead of a baby. What the delicate stomach

of the baby needs and is "geared" for is human protein, human fat and humanized sugar and salts. It can hardly be over-stated how vitally important it is, not merely for the baby's survival, but for his future vigour and growth that he should obtain during the first three or four weeks of his life a humanized supply of food. Even if it is only possible, for physical reasons, for him to receive one half, or one third, or one fifth of his nourishment in this form, it is worth every effort made to obtain it. After he has reached the fourth week he becomes capable of tackling the tough curd of cow's milk with comparative ease and this can be made an increasing element in his diet if circumstances demand it.

But the feeling of thoughtful pediatrists, or specialists in children's diseases, is coming more and more to the view that the very perfection of our methods for modifying cow's milk and controlling its purity have now become a source of danger in that they lead us to think that we may neglect breast feeding with impunity. The best and most successful "milk depots" in England and in Europe are devoting themselves more and more exclusively to the encouragement and promotion of breast feeding and are finding, not only that the babies are thriving much better but that it actually costs less to feed the mother than it does to feed the child directly. The best milk depot nowadays is the one that uses the least cow's milk, and as Doctor Sykes

puts it: "The best way to humanize cow's milk is to pass it through the body of the mother."

If this be our attitude toward even the most carefully modified cow's milk, what shall we say of its commercial substitutes and parodies, infant's foods? — that the majority of them are little better than sanitary nuisances, and that I hope to see the day when their manufacture, advertisement and sale will be prohibited by law. The sole virtues of most of them are that they seem cheap, are convenient to handle and save trouble for the indifferent nurse and careless doctor. They are excellent things in their place, but their place is on the shelf in the drug store, not in the nursery. The only exception is some of the pre-digested foods, which may be temporarily used to tide a weakly baby over a strain. But even here it is much better to get cow's milk and peptonize it yourself. They are none of them the equal of good, properly modified cow's milk, either in nutritive value or in digestibility, with the partial exception of the pre-digested forms.

Those that are prepared from milk and represent something even approaching to real foods for a baby are from five to twenty times as expensive as milk in porportion to their nutritive value, with no counterbalancing advantages except being easy to prepare. Those which do not represent milk, and they are the vast majority, owe such virtues as they may possess; the milk with which they are

mixed, and the mixture when made, is inferior to plain milk, on account of the excess of sugar or starch. The majority of them, in order to increase the profits of their sale, contain large quantities of starch, indeed some of them consist chiefly of this interesting food, which, though good food for an adult is almost useless as a food for a baby under six or even nine months of age. Careful analysis have shown that a baby up to three months of age can utilize in its food not more than half of one per cent. of starch, and that anything above this amount is injurious, as a baby's saliva and intestinal juices contain little or no starchy digest ferments until after this age. Yet many of the best known and most extensively advertised of these foods contain from seventy five to eighty-two per cent. of starch.

Finally they are all *killed* foods, killed in the process of drying, baking, sterilizing and preparing, while the baby needs its food *alive;* and as a practical consequence it has been found these ten years past that babies fed exclusively and even too largely for long periods on any of them develop *scurvy* or *rickets.* The bottle is a danger signal in the nursery, but the can of infant's food is a "hoodoo" — a far surer sign of scurvy, if not of death, in the family within a year than a black cat or a broken mirror.

If the human budlet is given plenty of sunlight and fresh air and sound food he will grow as irresist-

ibly as the cherry sapling lifted the millstone through whose central hole it sprouted out. A most important danger signal is failure or arrest of this growth. Every baby should be weighed at least once a week during his first six months, and once or twice a month for the next three years. Nothing will furnish better proof of the vigour of his health and the adequacy of the care that he is getting. Roughly speaking, he should gain about a pound a month during his first year (fourteen pounds); during his second year a little more than half a pound per month (eight pounds). It may simplify matters to remember that his growth in length or height should be half as many inches as his weight in pounds, viz., about half an inch a month during first year; a little over a quarter of an inch a month during his second, and about two inches a year after that. If your baby is elongating and increasing in specific gravity at about this rate or indeed, under ordinary circumstances, within twenty per cent. of it either above or below, as he will usually be doing eight times out of ten, you may set your mind at rest about his future.

Other indications of growth and healthy development are not quite so easy to determine and keep track of. The main difficulty is that we do not properly realize how "far back," so to speak, our babies are born. For instance, because we can see their tiny little pink sea-shells of ears we are sure

that they ought to hear from the day that they are born, forgetting that for the first three or ten days after birth the average baby is practically deaf and pays no attention whatever to sounds except they may be loud or rumbling enough to jar his little body or head. As a general thing it is of little use to whistle or snap your fingers to attract a baby's attention until he is nearly three or four months old, though he will notice loud and disturbing noises as early as his fourth week.

Similarly because the midget's eyes are open the very first time that we see him we are quite sure that he can see from birth. As a matter of fact all that he has is the vaguest perception of light, and that light must vary in intensity or be in rapid movement before he can recognize it at all, up to about two or three weeks of age. At about four weeks he should, normally, begin to follow objects with his eyes, but many perfectly healthy infants pay little or no attention to even moving objects unless they be bright coloured or vividly illuminated, until four or five months of age. As for the idea that your precious offspring can recognize you, still less read the extraordinary contortions of your countenance when you make faces at him short of four or five months — why, he doesn't even recognize you as a feature in the landscape and couldn't tell you from a red tablecloth or a bed post to save his life. He has absolutely no

notion of the outlines of objects or even of objects as such until, about the age of from three to five months, he begins to reach out his little front paw and clutch the shiny or vividly coloured clouds that are floating round him.

A baby should be able to hold up his head at four months and to sit up unsupported at nine, but there is no reason to fear for either his intellect or his bodily vigour if these triumphal feats be delayed until six and twelve months respectively. Only one thing is really significant in the first few weeks of life and that is feeble or absent hand grasp. The normal child should be able to grasp firmly — clutch is the better word — a finger, pencil or other object of suitable shape rubbed across his tiny palm within the first ten days. Indeed, as is well known, babies are born literally where the old "Rock-a-Bye Cradle" swings, in the treetops, as they can not only clutch like little forceps, but swing supported by their hands three to five times as long as a healthy adult man can without training.

Another danger signal is backwardness in learning to walk, or, as it should be expressed, backwardness in *growing* to walk. This triumphant art of navigation should be mastered by about twelve months of age, but practically it varies over wide limits. Some children start darting about like little water bugs at ten months, while others, through perfectly healthy and vigorous, may stol-

idly content themselves with slower methods of the wriggle and crawl until fifteen, sixteen, or eighteen months, then, within a week, be running all over the house. In any case it is a matter of growth, not training, and nothing that can be done in the way of teaching or helping the child to walk will expedite matters in more than the slightest degree, and the more such interference is the greater the danger there is to do the child harm in the direction of bow-leggedness or weak knees.

Your baby grew from a tiny little droplet of animal jelly, first into the shape of a worm; then in the shape of a fish with gills and fin-like buds instead of arms and legs; then he became a mammal with a well marked tail; he was born a quadruped and in due process of time he will as inevitably become a biped, a speaking and a tool-using creature. All he needs is proper surroundings in the shape of air and food, and the privilege of your intelligent companionship, so that he can do a little imitating. Given these he will arrive, as the French say, at the full stature and powers of manhood as inevitably as the sun rises and sets, unless prevented by death or by crippling disease.

One other dread in the nursery might be mentioned, fortunately a rare one, but whose possibility is much worried over by anxious mothers, and that is convulsions. As compared with adults, convulsions occur more easily in children because their little

powers of expressing irritation or removing its cause have not been fully developed and the energy which, in a grown-up would be used for swearing or fighting, "explodes" in this aimless outburst of muscular twitching. They do not occur in more than a small percentage of children and when they do occur are rather significant. Far the commonest cause of them is some fever or other infection of which they are the first striking symptom. Scarlet fever, measles, whooping cough, diphtheria, diarrhœa, cholera infantum, bronchitis, or pneumonia may all be ushered in by convulsions. It was long believed that convulsions came from the stomach and that taking excessive amounts, or indigestible articles of food would give rise to a convulsion. This belief, however, did not stand the test of investigation, but was probably due to the fact that the commonest source of infection in the infant is through food. These convulsions of digestive origin are really due to germs or their toxins which have been taken in the food and, in fact, often the first warnings of a sharp attack of infantile diarrhœa, which is an infectious disease nine times out of ten.

Diseases which are ushered in by convulsions are apt to be of a very severe and fatal type, hence the impression which has grown up that convulsions in children are apt to be fatal. As a matter of fact only a small percentage are fatal, and even in these the death is due to the disease of which the

convulsion was only a symptom. Another percentage of convulsions, a small one, is due to tuberculosis of the brain and its coverings, known as *tubercular meningitis;* while about the same proportion are due to syphilis and malaria.

Not merely has the fatality of convulsions been both exaggerated and misinterpreted, but their effect upon the mental development of the child as well. It was quite commonly believed until recently that an attack of convulsions in infancy might blight the child's whole future development and leave it either epileptic or feeble-minded. The real fact of the matter was just the reverse — viz., that many cases of epilepsy begin in infancy and early childhood, and the convulsion which "caused" the succession of fits following it all through life, is itself the first epileptic seizure. The stories for instance, of children having been thrown into convulsions and made epileptic and feeble-minded ever after by some particular food given them — most commonly meat — had for their basis this belief that convulsions were due to errors of digestion and caused epilepsy. Not more than one per cent. of convulsions in infancy are followed either by epilepsy or feeble-mindedness. While on the other hand, data gathered in homes for the feeble-minded, and colonies for the epileptic show that something like forty per cent. of both of these unfortunate classes suffered from convulsions in childhood.

CHAPTER IV

THE SWEET TOOTH

WHY do we always couple "sweetness and light" — with sweetness in the lead — as our highest conception of spiritual development? Why is it that in all literatures and legends "sweet" is invariably associated with "sound," wholesome — the scent of flowers, the song of birds, the golden sunlight — with everything that is pure and fresh and sound? Why is a sweetheart the most delightful form of cardiac motor that can be begged, borrowed, or stolen anywhere? Why don't we say "sour as a May morning," "alkaline" as the breath of kine, "bitter" as the nightingale's song, "nutritious" as the new-mown hay? Because deep down, instinctively in the heart of us, we feel, no matter what the preachers or philosophers or the health journals may say, that, to paraphrase Browning's defense of beauty,

> If you get *sweetness* and naught else beside,
> You get about the best thing God invents.

Sweetness is to the taste what beauty is to the eye — nature's stamp of approval and certificate of wholesomeness. It is one of the most universal

flavours of foodstuffs known. Over one half of our real foods taste sweet or sweetish — that is, they contain sugar in some form. About one third taste salty; not more than one tenth taste either bitter or sour. The experience of millions of years, reaching far beyond even our arboreal ancestors, has taught us beyond possibility of forgetting that, while there are hundreds of things that taste salty which have no food value, and scores of things that taste bitter that not only have no food value but are even poisonous; and thousands of things, like leaves and sawdust and cocoanut matting, which have no food value at all until advertised as breakfast foods, there are comparatively few things that taste sweet which are not real foods. A very few of these sweet-tasting things, while real foods, are also poisonous, but these we soon learn to detect and beware of.

It was only in comparatively recent years that we discovered and realized how exceedingly widespread sugar in some form was in all of our food substances. That universal and omnipresent primitive staff of life — milk — upon which every mammal that walks or climbs, or swims, must begin its existence, whether it is to wear fur or bristles or clothes, whether it is to be carnivorous, herbivorous, omnivorous, or fletcherite, contains sugar as one of its three most important elements. Nor is this, as is popularly supposed, a mere trace, barely enough

to give the characteristic sweetish taste of milk, but it is a full-blown member of the great trinity of nutrient materials, sugar (*carbohydrate*), meat (*protein*) and fat, and constitutes nearly one third of the nutritive value of this liquid food — the best liquid food, it may be remarked in passing, that has ever yet been invented, the only one on which life can be maintained for prolonged periods; while the utmost ingenuity of the chemist and the manufacturer has never yet been able to produce another liquid food, no matter what it may shine forth as in the advertisements, which, bulk for bulk, is equal in nutritive value to milk.

Milk is literally liquid flesh, containing all our body stuffs in exactly the proportion in which they are required in childhood, and needing only a little sugar or starch added to be the same for adult life. It is the only infant's food on which infants will *live*, though they can be made to feed on a variety of others. The curse and cause of infants' foods is a vegetable product — starch — whose sole merit is its cheapness, and which has slain more innocents than a hundred Herods. Every animal, and for the matter of that, bird or fish, whatever it may become in later life, gets its start as a meat-eater — a carnivore; and however well or ill adult human beings may be able to stand vegetarianism, if it were enforced in the nursery it would wipe out the human race in a single generation.

There can be few better illustrations of the impossibility — I had almost said absurdity — of attempting to draw hard and fast chemical lines through our menus than the distribution of sugar. Not only does the one food which we have all had to begin life on — milk — contain it in considerable amounts, and all our starchy foods, cereals, fruits, tubers, etc., depend upon it for their sole nutritive value, but every known meat, fish, flesh, fowl, or "gude red herrin'" also contains it in appreciable amounts, and some of them, such as liver, strange as it may seem, contain it in as large amounts as many vegetables or fruits. When we speak of "meat" or of the flesh of animals, we usually mean the muscles, which eons of experience have taught us to be the safest and wholesomest part of the animal body to eat, least liable to contain either disease germs or ptomaines. Every tiniest fibre of this muscle-stuff contains both glucose and a special sugar known as muscle-sugar, or *inosite*, whose presence gives the peculiarly sweet and juicy taste to the better cuts of beef, and the flesh of fat or young animals, which is more abundantly stored with this substance than that of old, lean, or hard-worked ones. Much of the dryness and tastelessness of game killed either early in the spring, after the long winter's famine, or in the tropics or on the plains at the close of a long period of drought, is due to the absence of this sugar, which has been

burned up by the animal in the process of starvation.

Many savage tribes, having, perforce, to live, not upon the well-fatted and little-exercised beeves and wethers of our farmyards, but upon the lean, hungry, and everlastingly active and "India-rubbery" antelope, mountain goat, and jack-rabbit, not to mention coyote, mink, muskrat and other such "small deer," have formed the habit of cooking their meat and flavouring their stews with maple-sugar or honey, just as we would use salt or spices. Indeed, almost every civilized menu shows traces and survivals of this strange primitive mixture, such as apple sauce with pork, currant jelly with mutton, cranberries with turkey, prunes with roast duck, mince meat; in Italy, pears with stewed veal; in Germany, cherries and strawberries in cabbage soup; in Sweden, raisins in meat stew.

This wide-spread prevalence of sugar in the muscles and other tissues of the animal body everywhere — the physiological reason for which we shall consider later — helps to explain the extraordinary prevalence of the sweet tooth throughout the animal kingdom. It is not perhaps generally known, except to those who have had much to do with wild animals in captivity or in their native haunts, but there is scarcely an animal of any class, not even the purest carnivore which does not crave sugar in some form and cannot be taught to eat it greedily.

It may decline it at first, because it has no smell. It must be tasted to be recognized.

It may be remarked in passing that this is simply another illustration of the biologic absurdity of an exclusive diet of any sort, whether vegetarian, fruitarian, "nutty-arian," or raw-fooder. There is no such thing in the animal kingdom as a pure vegetarian, all of us having begun on milk; not even in the bird class, for every nestling is carnivorous — a grub, insect, or fish eater — and there is no such thing as an exclusive meat-eater, or carnivore, with the possible exception of a few blood-suckers like the weasel and the vampire bat.

If you have any doubts as to the sweet tooth of wild animals, even including those that are usually classed as carnivore, or beasts of prey, just go to a patch of sand-cherries on the plains of Wyoming or western Nebraska in the fruit season and look at the prints on the sandy soil under the little bushes, and if you know anything of woodcraft you will need no further evidence to convince you that this is the Waldorf-Astoria for half the surrounding country-side. The main web of the network of crossing and recrossing trails and footprints is made up of the tiny pads of prairie squirrels, marmots, jack-rabbits, and the like; but striding boldly across the pattern in every direction, you will find the Bertillon prints of scores of coyotes, of swifts or prairie-foxes, of mink, of skunk, and of badger, while if near enough

to a box cañon or a pass in the foot-hills leading up to the mountains, you will find the big saucer-like print of the mountain lion, or the huge paw of the cinnamon, or the grizzly. A blackberry patch in the Adirondacks or a salmon-berry or salal thicket in the Cascades, the Siskyous or the Sierras will show the autographs of every inhabitant of the surrounding woods and waters.

One of the most interesting developments in the chemistry of foods has been the discovery that not merely do all staple vegetable foods either consist chiefly of, or contain starch-sugars, such as the grains, nuts, fruits, etc., but that our pure animal foods — meats, fish, game, etc. (*proteins*), contain from twenty-five to fifty-five per cent. of their energy in the form of animal sugar (*glycocol*), or animal starch (*carbohydrate*). So that any diet which it is possible to discover in a state of nature contains considerable amounts of sugar-starch. This is interestingly shown in a most unexpected quarter by that serious and well-known disease, diabetes, whose most striking feature, of course, is the escape of considerable quantities of sugar from the body, through the kidneys. This, with perfectly natural but infantile logic, was first believed to be due to the eating of excessive amounts of sugar in the food, but this delusion was quickly exploded, as it was found that the sugar of diabetes came chiefly from the starch of the food. Our next "grammar-grade"

step was therefore to cut starch entirely out of the dietary of the diabetic; but, much to our surprise, while this would for a time prevent the appearance of sugar, as the disease progressed the sugar would reappear, even upon a diet absolutely free from either sugar or starch in any form.

We were puzzled to know how the diabetic body could manage to make sugar out of proteids until a more careful analysis of muscle fibre and the curd of milk showed that both of these pure proteid substances contained a large per cent. of starch-sugar and that the patient was also breaking down and burning up his own tissues in the desperate endeavour to replace the sugar cut out of his food. This was proved to be true both by weighing the patient and discovering that the loss of his body weight corresponded quite accurately to the amount of sugar which he excreted, and also by giving him large extra amounts of meat in his dietary and finding that much of the sugar-starch contained in it appeared as sugar in the urine. The real disease and fatal defect of the diabetic is, precisely, his inability to burn sugar; and his steady decline and almost certain ultimate death are a painfully vivid illustration of the importance of this food in the body.

So that this disease, which was long believed to illustrate the dangers of eating sugar, is, in reality, a most convincing proof of its importance and

necessity as a food. Instead of depriving our diabetic patients of both starch and sugar completely, we now endeavour to increase their power of burning sugar, or by short "starch fasts" and by experimentation with other starches than wheat, such as oatmeal, rice, potatoes, soy-bean and various preparations of curds. Fortunately, some diabetics who cannot burn more than very small amounts of wheat starch, in the form of bread, will be able to burn enough starch to keep up their strength, in the form of oatmeal or potatoes.

All of which clearly proves from a scientific point of view, what we have known by instinct for the last three million years, viz., that sugar is a full member of the great Dietetic Trinity, the three great indispensable food substances: Meats, Starch-sugars, Fats (*proteins*, *carbohydrates*, *hydrocarbons*), without which no animal can maintain life or health. If any man is going to maintain an exclusive diet from which any one of these three food foundation-stones is to be omitted, in the first place he will have to do it on laboratory or factory products; and in the second place he will have to eat considerable amounts of his tabooed substance without knowing it — or admitting it in public — if he expects to continue on this mundane sphere. Perhaps on the other side of Jordan we may succeed in existing upon sugar-free, meat-free, grease-free, purin-free, or salt-free dietary, but never on this.

Now, what is all this sugar doing "in that gallery" of the muscle cell? All sorts of curious answers have been returned to this question. It was supposed to be a sort of storage product — the liquid capital of the body's savings-bank, like fat, or like starch in the vegetable. It was even put down as a waste product, and it was only a few years ago that the real purpose and importance of its presence was discovered. To put it briefly and roughly, it serves as the fuel for the muscle engine. Each of those tiny explosions, which we call a contraction, of muscle, burns up and destroys a certain amount of sugar, and as soon as the free sugar in the muscle has been used up, then that muscle is as incapable of further contraction as an automobile is of speed when its gasoline tank is empty.

Muscles of cold-blooded animals, like the heart of a tortoise, for instance, can be completely removed from the body and kept beating regularly, not merely for days, but even for weeks, as long as they are supplied with artificial "blood" to pump through themselves, consisting solely of a solution of certain proportions of salts and grape-sugar. While our muscle-engines can burn protein and, at a pinch, fat, yet it is pretty certain now that their chief and preferred fuel is sugar in some form. The best and most readily absorbed and combustible sugar is that contained, as we have seen, in meat, milk, etc. (*proteins*), but the starch of grains and the

sugar of fruits is a pretty close second, though it is doubtful whether these alone can ever completely meet the fuel demands of the organism. Certainly every known animal and race of man has both his vigour and his disease-resisting power increased by taking part of his sugar-fuel in animal form.

Practically, man, while preferring muscle *protein* and muscle sugar to all others, has always been both driven by necessity and led by instinct to draw a large share of both his *protein* and sugar-starch fuel from the vegetable kingdom. The greatest advantage of these vegetable foods is their cheapness, but they also possess certain other desirable qualities, such as forming waste products which help to neutralize those produced by meat and which, being thrown off by the lungs in the form of carbon dioxid, help to relieve the otherwise heavy burden of excretion thrown upon kidneys and skin. Both the bulk and the majority of the fuel value of every known human diet save that of a few hunting tribes, consists of starch in some form and *every particle of this has to be turned into sugar before it can be utilized in the body.*

A singular feature is that while practically every one concedes the wholesomeness, nay, even the positive virtue of starch, there is a strong popular prejudice against its twin carbohydrate, sugar. Sugar-eating — candy-gorging — is denounced without stint both by mothers in Israel, hard-headed

economists, and diet reformers of all classes. It is bewailed as the dietetic sin of the century, the cause of the decay of modern teeth, of the alleged decline of modern physique and vigour, the fertile cause of fermentations and putrefactions in the stomach and bowels, the shortener of life and precipitator of old age; while an alarming list of the ills of twentieth-century humanity such as diabetes, gout, cancer, and nervous diseases are laid at its door. In fact, in certain circles it is berated almost as vehemently as a *fons et origo mali* as its second cousin, alcohol, is in others. This eager thirst for single and simple causes of multiple and complex evils is one of the pet obsessions of human thought. It invented the devil in primitive times, and the drink demon, the cigarette fiend, the meat lust, and the sugar habit of our own day. While our denunciations of all these evils have unquestionably a certain amount of rational basis in fact, they have been and still are carried to absurd and injurious extremes.

The very authorities who are most vehement against sugar are at the same time, like most diet reformers of to-day, ardent and devoted worshippers of starch, every particle of which has to be turned into sugar before it can be utilized by the body — not cane sugar or beet sugar, it is true — but one equally subject to fermentations of all sorts and even more capable of giving rise to diabetes, pre-

mature old age, and the whole train of evils laid at its door.

The principal causes of this distrust and denunciation of sugar seem to be: First, because children cry for it; second, it is attractive to the natural appetite and may be indulged in to excess, and is therefore wholly bad; the familiar argument of the monk and the ascetic of all ages against the "lusts of the flesh," including the family affections and half the virtues; third, because it is new, and therefore to be viewed with alarm and suspicion, and promptly accused as the cause of any new or newly discovered disease which cannot otherwise be accounted for.

The first objection fortunately needs little attention nowadays. Powerful as it may have been in starting the prejudice against sugar, we recognized, years ago, that instinct, craving, an untaught preference for a particular thing or action always *means* something; indeed, we might almost say in Browning's phrase, that it "means intensely and means good," in nine cases out of ten. It is the crystallized result of the experience of thousands of generations, and while, like all other impulses, it must take its place in the parliament of instincts and submit to the rules of order of reason, in the main it is a safe and invaluable guide. The young, unspoiled human animal has a liking for sugar just as it has for sunlight, for fresh air, for play, for paddling in the surf and plunging in the stream, or

for food when it is hungry and sleep when it is tired; and, subject of course to reasonable limitations, as wholesome as any of the others. This is precisely what our specialists in children's diseases, and broad-minded family physicians have been urging for decades past, and it would be safe to say that next to the banishment of starchy foods, gruels, and paps from the nursery and the substitution of pure, sweet milk, few things have done more to increase the vigour and happiness of modern children and to cut down our disgraceful infant mortality, than the free and intelligent use of sweet fruits, preserves, sugar, taffy, and butter-scotch in the nursery.

One of the earliest additions that is now made to the exclusive milk diet of a six-months-old baby is the pulp of a baked apple, or the juice of stewed prunes, while sweet apple sauce, sweet oranges, bananas, and ripe fruits in their seasons are a regular and important part of all modern dietaries for young children. Nearly twenty years ago one physician-philosopher declared that if we would give children plenty of butter-scotch and taffy, they would need little cod-liver oil. And his prophecy has well-nigh been fulfilled already, for this "pampering" of the natural appetite of the child for sweet fruit, sugar, and candy, has resulted in very nearly banishing to the limbo of fecal medicine where it really belonged, that nauseous relic of barbarism, cod-liver oil and its twin sisters, rhubarb, quassia, gentian,

and other bitters, whose principal virtue was their abominable taste. The diet of children has been far too much formulated in the past upon the simple and intelligence-saving principle of urging or even compelling them to eat that which they did not want, and depriving them of most things they did want.

The regulation of their physical food was, like that of their mental pabulum in formal education, conceived too much in the spirit of the nursemaid who, missing two of her young charges, sent another one in search of them with orders to "find Miss Flossy and Master Ralph, see what they were doin', and tell them they mustn't!" But fortunately we are outgrowing that sort of thing, and when we have completely done so, fully half of the prejudice against sugar will have disappeared.

As to the second objection to sugar: that it is so attractive as to be easily indulged in to excess, it is merely necessary to remind ourselves in the quaint phrase of old Ben Jonson:

> But sweetest things turn sourest in their deeds,
> Lilies that fester, smell far worse than weeds —

and that the more powerful a thing is for good, the more potent it may be for evil if carried to an extreme. It is certainly one of the chief ethical advantages of the starches that nobody but a cow or a rabbit would be tempted to indulge in them to excess; but to cut out of our dietary or even discourage the use of all substances which are highly appetizing

and seductively attractive, is simply a form of slow suicide. Yet this is the keynote and fundamental principle of the crusade of our diet reformers against meats and sugars. The practical result of cutting out or limiting the sugars and meats in our diet is to diminish its total amount, and such temporary or imaginary benefits as may follow are the results of a polite form of mild starvation.

Children *may* eat too much sugar and they *may* also stay too long in their bath tub, or in the creek when they go in swimming, or get tanned or a headache from playing too long in the sun, or chilled by staying too long in the open air; but is that any sound reason why they should be deprived of sweets, sunlight, baths, and fresh air, or discouraged from indulging in them? All that is needed is a little common sense regulation and judicious supervision, not prohibition, or denunciation. Most of the extraordinary craving for pure sugar and candy, which is supposed to lead the average child to inevitably "founder himself" if left to his own sweet will and a box of candy, is due to a state of artificial and abnormal sugar starvation, produced by an insufficient amount of this invaluable food in its regular diet. Children who are given plenty of sugar on their mush, bread and butter, and puddings, a regular allowance of cake and plenty of sweet fruits, are almost free from this craze for candy, this tendency to gorge themselves to surfeit, and can

usually be trusted with both the candy box and the sugar bowl.

The last ground of prejudice against sugar, that of its newness, is interesting from several points of view. There is no more favourite and irrepressible delusion of the human mind than that this particular age in which we live is a degenerate one and that the rising generation is an especially striking example of that fact. Every time that a new disease is discovered — discovered just as America was by Columbus, it was there all the time only we had not the sense to recognize it — every old wiseacre lifts up his voice to the effect that: "We never had nawthin' like that when I was a boy." And since for a new phenomenon a new cause must be discovered, he usually proceeds to promptly accuse one of "these here new-fangled foods."

Thus, our modern abundance of fruit and preserves is confidently brought forward as the cause of appendicitis. Tomatoes are gravely accused of being the cause of cancer, the cigarette of every variety of youthful depravity; and sugar as the fruitful mother of a whole brood of diseases and degeneracies. The process has been going on ever since the ark landed on Ararat and has not a particle more basis in fact or solid common sense, than it had when it began. Incidentally, as a matter of fact, sugar is *not* a cause of modern degeneracy or shorter life, or increasing "onhelthyness," for the

simple but sufficient reason that the present generation is taller, healthier, and longer-lived than any that has ever preceded it. Its abundance and cheapness *is* one of the causes of our improved and improving modern physique.

However there is just this trifle more actual basis for dread of a possible excessive indulgence in sugar in these modern days, on this ground. That is, that whereas formerly sugar could only be secured in a very dilute form as a flavouring element in milk, fruits, grains, and the juices of certain plants, it can now be obtained both cheaply and abundantly in pure concentrated form. In a rough way, the sugar refinery and the growth of the cane and beet-root industry have done for sugar what the still has for alcohol — concentrated it and thus rendered over-indulgence more easy. Sugar, unquestionably, is a surprisingly modern luxury, and it is hard for us to realize sometimes that, up to about one hundred and fifty years ago, almost the only concentrated or pure form of sugar available was honey or dried tropical fruits, like figs and dates or, in certain districts, maple sugar. It was, emphatically, a rare and expensive luxury — in the days of King John "six lumps of sugar" were recorded as a royal present — and it is quite possible that an appetite for it whetted to the keenest possible edge by such rarity, might, if not watched and moderated, lead to excess.

But there is this fundamental difference between

the craving for sugar and that for "sours," acids, vinegar, pickles, etc., alcohol, and for other keen flavours and highly attractive luxuries, that it is a real food of very high food-value and very promptly and readily absorbable, which none of the others are, except in small degree. As we have seen, this violent craving for sugar, leading to excess, largely disappears in children when their healthy demand for it is supplied by a proper mixture with their foods; while no child yet has ever inherited or been born with a taste for alcohol, pickles, tea, coffee or tobacco. One of the greatest values of sugar, apart from its high-steaming power, is the rapidity with which it can be absorbed and burned in the body engine. The careful and exhaustive researches of Lee, Mosso, Harley, and Schomburg showed that there was no food which would restore working power to fatigued muscles of both men and animals, so quickly and effectively as pure sugar. Indeed it was suggested by Professor Lee that tired business men, carried beyond their regular lunch hour, would find a few lumps of pure sugar one of the best of temporary restoratives and "pick-me-ups," far superior to alcohol. This is probably the reason why some individuals when fatigued will retain an appetite for sweet things though they have almost completely lost it for anything else.

Indeed, the rôle and importance of sugar as a rapid reliever of fatigue is one which we are only

just beginning to appreciate, and which goes surprisingly far already. It has been incorporated into the most hardheaded, cold-blooded, matter-of-fact diet on earth, the German army rations, especially the "forced-march" emergency ration. No other food of its bulk can take its place. It is the belief of careful observers of men, particularly in the tropics, that the larger the amount of sugar, and sugar-containing foods they are supplied with, the less alcohol and other stimulants they will crave. For instance, the United States Government now buys the best and purest of candy by the ton, and ships it to the Philippines, to be supplied to the canteens and messes, finding that its use diminishes the craving for native brandy; and it has long been a matter of comment from thoughtful observers that the amount of drunkenness of a race or class is in inverse ratio to the amount of sugar it consumes.

There is less drunkenness in America than in any North European country, and the first thing that strikes a European of intelligence on landing in this country is the extraordinary abundance and multiplicity of candy stores, ice-cream parlors, and venders of sweets, fruits, and "hokey-pokey." In Germany, for instance, it is considered unmanly to confess to a taste for sweets. It seems not impossible that the well-known anthropologic fact that drunkenness is a function of temperature, that only the

CHAPTER V

THE KINDERGARTEN AGE

THE first danger-signal in the kindergarten age is the kindergarten itself. The keynote of the nursery stage of man is food, sunshine, and rest. The keynote of the kindergarten stage is food, open air, and exercise. The schoolroom supplies none of these; hence it is, at this stage, a superfluity a hindrance to growth, both physical and mental. There is nothing done in the kindergarten which could not be far better done in the playground or a real garden; nothing taught but what healthy children would teach themselves, under intelligent supervision and guidance. Moreover, the kindergarten violates nature's most insistent rule — that the growing child shall be able to give a valid excuse for every hour spent indoors. Even its sleep is better taken as nearly as possible in the open air. Indoor work of any sort, and particularly that which is done sitting down, traverses absolutely the natural order of growth and development of the child. What he needs and is most interested in is large, full, sweeping movements, involving the whole arm, or both limbs, or all of these together and the body as

well, instead of little, precise, carefully guided, toy-mouse kinds of movements with the hand and fingers alone. Accuracy, precision, precise proportion, he is absolutely incapable of now and should not even be allowed to attempt. Nothing could be much worse for an active, sturdy, growing child, who wants to run and tumble, wave his arms about and kick his legs in the air and shout, than to be planted in a footsy little chair at a doll's-house table, pricking tiny holes in a sweet little piece of perforated cardboard. It were better for him to be out in the street learning to fight and crawl through sewer-pipes.

A child's eyes and crystalline lens and eye-muscles are all, at this age, adapted to what his interests call for, viz., looking at large, swiftly moving, readily visible objects, preferably at a distance of eight or ten feet, or more. He, in one sense, is born old, in that he is born slightly far-sighted; and to compel him to concentrate his attenion, for hours at a stretch, upon small, intricate objects at close range is to throw upon his elastic and readily mouldable eye-balls a strain for which they are utterly unfitted and which is exceedingly likely to result in compressing them out of shape, causing them to elongate and to become myopic, or short-sighted. Close work, after ten or twelve years of age, while it may seriously fatigue the muscles of the eyes, can do little to change its shape; but between four and seven there is no

question of the serious damage which may be done by aggravating any short-sightedness with which the child was born, or producing it in those who would otherwise have escaped it. Examinations of the eyes of thousands of young children in all parts of the world — savage, barbarian, and civilized — have shown that they all practically start in life with the same shape of eye, viz., a slightly flattened or long-sighted one, and that the percentage of those who develop myopia, or short sight, is in precise relation to the earliness with which they are put into school and the constancy and length of their confinement in the schoolroom.

Moral: Don't worry about the school you are going to send your baby to. Keep him out of any sort as long as your conscience will let you — and then a year longer. This is perfectly good and safe advice. A child's proper business is to grow, and to exercise his powers as fast as he gets them. This gives him an enormous appetite, which causes more growth and again calls for more exercise of new-found powers. In so far as school is carried out within four walls, it does nothing to help this progress and much to hinder it. It may be tolerated, but on sufferance only, and the rule at this stage should be to reduce it to a minimum. Nine tenths of the growth that the modern child under ten makes, whether physical or mental, he makes in spite of school, not on account of it.

There is no need whatever for conflict between education and growth; indeed, all the most intelligent and progressive teachers, from kindergarten to high school, are at one with the doctor and the sanitarium and anxious to harmonize them. All the rational aims of school can be attained with far less friction and labour for both teachers and pupils by methods much less inimical to the child's health. If school hours were cut down to two hours a day, and the time saved devoted to intelligently supervised natural play, gardening, carpentering, etc., in the open air, children would make just as rapid progress in their studies, even under our present antiquated curriculum as they do now.

Purely from the point of view of vital economics, I know of few institutions more wasteful of the time, the health, and the temper of both children and teachers than our present school system. True, it doesn't do much harm, because the young human animal is most providentially tough, and will continue to grow and develop such powers as he was born with, both physical and mental, no matter what is done to him, so long as he is well fed, gets plenty of sleep, and is given a chance to get into the open air a few hours each day.

The hygienic conditions of the schoolroom may be better than the homes of its children, but they are always worse than those of their play places, which they would live in if released; and five hours'

daily confinement at hard labour is hygienically an exceedingly poor substitute for a day in nature's great school — all outdoors!

Still abideth the trinity of growth — food, air, exercise; these three, and the greatest of these is food. Our little human locomotive must have fuel first, fuel last, fuel all the time. Not merely what he needs to keep him running twenty-four hours out of the twenty-four, for he is the embodied secret of perpetual motion, but enough to enable him to grow from a tiny donkey-engine into a great six-foot-wheeled, mountain-climbing mogul. Also incidentally remember that his running gear and cylinders and driving-wheels are not made of starch, and he cannot build them out of mushes and puddings and potatoes, any more than he can make bricks without straw.

CHAPTER VI

FEEDING THE HUMAN CATERPILLAR

EVER since the day of the Seven Ages of Man we have known that a man passes through a series of distinct and different stages in the course of his life. But we do not so clearly realize that he is also a different creature, often widely so, in each one of those stages. The child is not "father of the man," as the absurd old proverb declares, but his "grub," or in technical language, his *larval stage* and as different from him in many respects as a caterpillar is from a butterfly. The baby not only crawls, but eats enormously, devouring nearly four times as much in proportion to his body weight as a grown-up does. The child rises above the crawling part of the caterpillar stage, but still retains the appetite. He literally lives to eat, devouring things like an army worm and is never happy — or healthy — when awake, unless devouring, or digesting something.

The appetite of a healthy child of the kindergarten age is something appalling. He is a walking famine, a hunger incarnate. All is grist that comes to his mill, and all hours of the day or night are

alike to him. But he needs every ounce that he will devour, and not one penny's worth of it will be wasted. Don't bother about the child. Just be sure that his food is right, pure, sound, and of the best quality, then let him go ahead! His wisdom is of the ages; yours where it clashes with his, is of the almanacs, of the catechisms and copybooks, of the silly chatter of the street and the kitchen. If children were not born hungry and continued so as long as they were growing, they would never grow up; for, even with the utmost liberality and kindest intentions on the part of us parents, we never can quite retain a realizing sense, a living memory, of the actual kind of appetite we had when we were boys, and how we absolutely suffered to eat! "The boy gets three square meals a day, just as I do, and eats almost as much!" we exclaim. "What more can he want?" *Three square meals a day for a healthy boy are just the mere foundation of his day's eating.*

Eating is a serious and conscientious business with him. He devotes a considerable share of his mind to it. And he is eternally and fundamentally right about it, as both biology and physiology have shown us. Yet up to a decade or two ago the most highly approved and frequently harped-upon theme in the petty morality of the nursery and the Sunday school was the greediness of naughty little boys and girls and its Terrible Consequences, from whippings

to colics and sudden death. Had we known of appendicitis then it would have been included as one of the bogies.

Upon what physiologic or rational basis the great, sacred dietetic principle of Three Square Meals a Day and No Eating Between Meals was founded is difficult of discovery, even for adults, and impossible for children. It certainly has no basis in the broad field of animal habits and experiments. Most animals in a state of nature eat whenever they can get food and until they can hold no more. Cows and horses, for instance, at pasture, graze steadily from half to two thirds of the day or in summer time, night. These scarcely come within the direct line of our ancestry, even on Darwinian principles, but I can't help thinking that traces of their characters occasionally appear in our children. So that, ancestrally, the healthy human stomach ought to be able to take care of any article of food in reason, in any amount within the cubic capacity of its walls, at any hour of the day or night. Thousands of experiments have shown that it has precisely the powers that might have been expected of it, on ancestral grounds.

The notion that the stomach requires a certain definite interval of rest between tasks in order to get up its supply of gastric juice has been completely exploded, inasmuch as it has been found that the resting and empty stomach contains no gastric

juice whatever; and it secretes none until food is actually put into it or smelled. In other words, it makes its gastric juice during the process of digestion just as it is needed, and, in all probability, out of the very food which it is digesting. The best, indeed the only, way to make the stomach secrete is to feed it, not rest it!

The principal sanction of the three-meals-a-day plan for adults is based upon convenience, taking as the distance between the longest period for which experience has shown the human stomach can be "loaded" comfortably without undue distention, and then spacing these times of loading at such hours as will least interfere with both the work and the business of the men, and the preparative labour of the women of the household. Meals in fact, are placed on an average, about five hours apart simply because this is the average run which the human locomotive can make before it needs to be coaled again. Not because our Sacred Stomach and Much-worshipped Digestion require a fixed and stated interval of rest between activities. If any one feels hungry between meals, let him eat by all means, providing that he eats that which is nutritious and reasonably digestible. It is a sure sign that he either ate too little at his last meal, or has worked too much, or in the case of the child, grown too much, since. As a matter of fact, the best fed and best nourished classes and peoples eat at least

four, and often five meals a day instead of the sacred three.

Therefore, let whoever has charge of the feeding of the growing child of the kindergarten age, deliberately plan and supply him with appropriate, appetizing and nutritious food materials suitable for "piecing" between meals, viz., sandwiches, milk, cookies, bread and butter, or rather butter and bread, bread and cheese, crackers, particularly sweet ones, nuts, fruit, candy. The size of a child's stomach is limited, and it simply cannot be filled full enough of ordinary food to carry him safely and comfortably over more than four or five hours. It is a good thing to have three or more regular meals, because it has been found, particularly in the feeding of babies that, whimsical as it may sound, a child's stomach must be stretched at intervals if it is to grow properly. It does not serve to administer the precise number of calories required in small doses two hours apart. The best results are obtained by three good, satisfying square meals a day, where he stays at the table until he drops off of his own accord, with one liberal piecing, or impromptu lunch in the middle of the morning, another in the middle of the afternoon and another, if desired at bedtime. This, by the way, is the regimen by which we cure consumption nowadays, and what will cure a sick man is scarcely likely to be fatal to a healthy one!

The child is consumed by the fever of growth as actively as the consumptive is by his hectic. When this rule is adopted, it will stop at once most of the abnormal cravings and gorgings and cramming themselves with all sorts of indigestible, unripe and unwholesome materials on the part of children. A healthy child would rather eat sound, wholesome, clean food. It is only when he cannot get it in sufficient amounts, or often enough, that he eats grass and green twigs and shoots and green apples and groundnuts, and "lickorish" and raw turnips, or carrots, or gorges himself to excess upon candy, or nuts, or cookies. When children are properly and adequately fed, they can be trusted with the candy box, the open fruit-basket and the nut bag, to say nothing of the key to the jam closet, or the pantry.

Here is a rational and physiologic day's march through this stage of his life's journey for a healthy growing boy or girl, of from five to seven years of age:

Eight a. m., breakfast, consisting chiefly of milk, eggs, bacon, ham, fish, mutton chops, with butter, bread, toast, griddle cakes, cereals, or cookies and fruit or preserves; and if a hot drink be desired, weak cocoa. (For details see menus.) Starches of all sorts, except bread should be used only as a supplement to, or "filler" with milk, eggs, meat or fish, or if taken alone should have plenty of sugar and

cream on them. The sugar and cream for instance, eaten with a dish of cereal form the most valuable part of the dish. Eight-thirty to ten-thirty, play in the open air, or if the ground be wet underfoot, or the weather too inclement, in a shed, barn or gymnasium. Ten-thirty, lunch, consisting of bread and milk, sandwiches, ham, beef, cheese or egg, cookies, cake, bread and jam, bread and "lasses," nuts particularly roasted or salted, and fruit. Eleven to twelve-thirty, more play in the open air including half or three quarters of an hour's light "lessons," in a well ventilated room, or outdoors if the weather permits. Twelve-thirty, dinner, consisting of meat, particularly beef, mutton, or pork, potatoes with one or more vegetables, especially tomatoes, peas, lettuce, celery and onions, with plenty of dessert consisting of sweet puddings, pie (omitting the bottom crust), cake, honey, preserves, or fresh fruit. If soup is given, it should never exceed more than a few tablespoonfuls in amount, as it has absolutely no nutritive value whatever and is useful only as an appetizer, and Introduction Committee to the *real* foods of the meal. There is ground for the belief that the stomach is stimulated by soups and meat extracts, to secrete the gastric juice, if indeed it does not actually use them in the process of making that juice.

If the child has been playing in the open air the greater part of the morning and is reasonably

healthy, and is started upon the meats and vegetables first, he may be given practically as many helpings as he will take of these, or even of the desserts, without serious danger to his digestion, save during the first few days, or weeks, when he is placed upon this unrestrained sugar and sweet ration. When children have once got the sugar hunger of their tissues reasonably satisfied, they show little or no tendency to gorge themselves upon pie, pudding, candy, or sweets, and a little intelligent oversight and gentle restraint is all that is needed to keep them within bounds. And how they will grow and gain weight, and lose their irritable temper and whiny ways and nervousness!

Half of our "high strung," "difficult," nervous modern children are sugar-hungry and often sleep-hungry as well. Plenty of sugar has almost as sweetening an effect upon the disposition, as it has upon the flavour of food. One to two, sleep or rest in a darkened room. Two to four, play in the open air; four, afternoon tea consisting of cookies, sandwiches, doughnuts, bread and butter, cake, jam, nuts, or almonds with either milk, or weak cocoa. Four-thirty to six, play in the open air, or in a well-ventilated nursery, barn or play room, according to the season, with half an hour to an hour of pleasant lessons with plenty of pictures and demonstrations. Six o'clock, supper, consisting of eggs, fish, or some light meat or cheese dish, potatoes,

a salad vegetable with bread and butter, toast, tea or other hot cakes, jam, cookies or fruit with milk or weak cocoa. Games or entertaining reading, or stories, until seven-thirty or eight, according to age, then bed. It is a good thing to leave a glass of milk, or crackers, on a chair beside the bed so that if the child wakes up in the night and is hungry, he can help himself; and particularly have these where he can get at them early in the morning before the regular breakfast hour.

MENUS

BREAKFAST

8 o'clock

Two slices of broiled bacon — One boiled egg
Hot rolls
One cup cocoa or one glass milk
One orange

LUNCHEON

11 o'clock

One glass milk (with cream in it)
One slice bread, butter and jam

DINNER

1 o'clock

One cup bouillon — One mutton chop
Mashed potatoes, peas
One cup apple and custard pudding

TEA

4.30 o'clock

One glass milk (with cream in it)
One cup weak cocoa — Two sugar cookies

SUPPER

6 o'clock

Minced beef on toast Potato straws
Lettuce
Stewed fruit with cream Sponge cakes

BREAKFAST

8 o'clock

Broiled fish or poached egg Water cress
Corn muffins Baked apple with cream
Cup cocoa

LUNCHEON

11 o'clock

1 glass of milk with cream in it
Piece of bread and butter with jelly

DINNER

1 o'clock

Chicken with rice or potato balls
Spinach or asparagus tips
Rolls Fruit Pudding with custard sauce

TEA

4.30 o'clock

One glass of milk Gingerbread or chocolate cake

SUPPER

Creamed chip beef Boiled macaroni
Baking powder biscuit with plum jelly
Cocoa

As will be seen, the most prominent place in this dietary is assumed by varying proteins or "meats." This is for the reason that children are made out of proteins and fats, and would yield, on the most

exhaustive analysis, only small percentages of starch. Youth is the period of growth, and if children are to enlarge their bodies they must be supplied with an abundance of those materials out of which their bodies are built. The rule is an absolutely unbroken one, throughout the whole of the animal kingdom. All young mammals for instance, live for the first sixth, or third of their growth period exclusively upon protein in the form of milk and flesh. All young birds, no matter what will be their food habits when they grow up, have to be fed throughout their entire growth period, up to complete feathering and flight, upon a diet consisting, in wild birds, of protein in the form of worms, grubs, insects, or fish; and in tame birds of hard boiled eggs, scraps of meat, curds or bone meal.

The young human animal is no exception to the rule of his kind. Furthermore all proteins, or "meats," including milk, as we have seen, contain anywhere from one third to one half their bulk of carbohydrates, or animal starches, chiefly in the form of some modification of sugar. These animal sugars and starches are far the best and most digestible form in which starches can be administered to the child. The solid parts of milk for instance, consist of about one part protein, one part fat and one and a half parts sugar. Abundant experience has shown that if young animals are to be made to grow rapidly and thrive, they do

best when given large amounts, not of starch or vegetable protein, but of milk, eggs, or meat. Even among grass-eating animals, such as cattle and horses, this rule holds, and where pedigreed calves, or colts, are being forced to the most rapid and vigorous growth for prize winning, or exhibition purposes, the food which is found most effective is large amounts of rich milk, which is added to their regular dietary by the gallon and the bucketful.

Nearly all the evils supposed to result from excessive meat eating in either children or adults, have been proved to be largely imaginary. Uric acid, for instance, has little or nothing to do with the amount of meat in the dietary, nor on the other hand has it any positive connection with the causation of gout, or lithemia, but is probably one of the symptoms of the underlying error of metabolism which causes these conditions. Meat or proteins of any sort have nothing whatever to do with the causation of Bright's disease, or any other form of disease of the kidneys. Nine tenths of these are the after-results of some acute infection like scarlet fever, pneumonia, tuberculosis, typhoid and even common colds. All the stories about children's being made "nervous" and "teeth grinders," or "bed wetters," or "thrown into fits and epilepsy" by meat are little better than fairy tales, or on a par with the old fable that if you hold a guinea pig up by its tail its eyes will drop out.

These disturbances occur in a considerable percentage of children from various causes, epilepsy always from congenital ones. Meat is, in our stingy philosophy, bad for children largely because it costs money! Ergo: Any scrap of meat that the unfortunate child happened to eat just before the restlessness, or convulsion, was the cause of it.

The next most prominent place in the dietary should be given to fat, particularly in the form of good butter, as children require double the proportion of this in their food that adults do. The nursery is and always has been eternally and fundamentally right in demanding plenty of butter on its bread. No Bread-and-Scrape for it! All starches, breads, puddings and cereals are, with the partial exception of corn meal, utterly lacking in fat and consequently should be eaten, according to instinct, with abundance of this element added in the form of butter, cream, or oil. Children should be allowed, yes encouraged, to eat butter and bread, rather than bread and butter. Because, while our adult needs call for only about one fifth of our total fuel in the form of fat, the child's more varied and intense demands for both activity and growth purposes call for from one fourth to one third of his fuel in this form, as instanced in the composition of milk with nearly one third of its solids fat.

The next most prominent rôle is played by sugar. The prejudice against this most useful and valuable

food for children is little better than a superstition and, I am happy to say, rapidly disappearing. Instead of its being a luxury and source of danger, one of our most competent and conservative, world-experts upon diet, Dr. Robert Hutchison, of London, summed up the feeling of the scientific world in the statement that "there have been few more important additions to our dietary, or which have done more to promote the health of the rising generation, than our cheap and abundant supply of pure sugar." The main arguments against its use were, first, that it cost money and, second, that children cried for it, and being unreasonable beings, and as Jonathan Edwards gently expressed it, "in the sight of God no better than young vipers," it was therefore sure to be "bad for them." If we had listened to the "wisdom of babes and sucklings" and given them what they craved a century earlier than we did, it would have been enormously to our advantage — and theirs! To "become as little children" is a pretty good preparation for health and wholesomeness as well as for entrance into the kingdom of heaven.

Our programme also calls for a large amount of sleep. Ten to eleven hours at night and an hour in the middle of the day, but that again is simply one of the Magna Charta rights of the young, growing, human animal. Sleep is not a negative, but a positive process. Our up-building processes

are at a maximum during sleep, our down-breaking ones, while awake.

Food-and-play-and-sleep, sleep-and-food-and-play —these are the magic circles of childhood. *Our best tonic for improving a child's appetite is to put it to bed.* Many of our lean, nervous, overconscientious, restless modern children need, instead of more play and amusement, more sleep, or rest in bed. If your child is nervous, excitable, easily tired, with a poor appetite and pasty colour, keep him in bed, in a room with windows wide open, every morning until nine or ten o'clock; make him lie down on the lounge again at twelve for an hour or more and again at four, and get him to bed early. Meantime feed him well with things that he likes, including plenty of meat, butter, sugar, cake, and fruit, and you will be astonished to see how his appetite, nutrition, and temper improve. There is no particular merit in sending children to bed with the chickens, so long as they are allowed to sleep as late as they want to in the morning. Sleeping to grow and get an appetite, eating to gratify that appetite, playing to get another one — this is the whole duty of child.

But what, challenges some one, will become of the poor child's mind all this time? Did you ever happen to know of a healthy, happy, laughing child that was not considered "bright" and promising? A child's mind during this period grows

just as its organ, the brain, does, through the use of his senses and the exercise of his muscles. Like the bear's cubs, in the old legend, which were born as shapeless lumps and "licked into shape" by the mother bear, children are born little lumps of possibilities and played into shape, both body and mind. It needs no argument to prove that children have an instinct for this kind of development, just as they have for food and for sleep — an instinct as keen and intense that it will sometimes, if allowed, overmaster all others, vital and fundamental as they are. Children, if not watched and gently checked, will often rush away from the table before they have fully satisfied their appetites in order to resume their play. They will forget that most important epoch of their day, the dinner-hour, in the excitement of a game.

The normal state of the healthy child is wriggling, or other more active motion, constantly, save when he is asleep or feeding. This the schoolroom deliberately sets out to put a stop to, and by so doing denies him his divine right to grow, utterly oblivious of the fact that a child will learn quickest on his feet, yes, on the run! It does not make much difference what kind of seats and desks your kindergarten or schoolroom has, provided the child is not expected to sit in them for more than fifteen minutes at a time, at this stage of his career. What a child most vitally needs in the way of mental development

is acquaintance with and knowledge of his surroundings — training to see accurately and to draw conclusions from what he sees; training to touch and handle and mould and work with things; training to hear and remember what he hears, and to work out the meaning of sounds, whether articulate or inarticulate, their relations to one another, their harmony or dissonance, their connections and associations with sights and smells and touch-perceptions; training to smell — to tell the difference between flowers and filth, between cream and cod-liver oil, between foul air and fresh, to reason out why he loves one and hates the other. There is very little need, at this stage, to teach a child what he should like and what he should dislike, only *why* he likes good and *why* he dislikes bad.

Let the child learn to speak by speaking, under correction and intelligent supervision; to read by hunting for the names and stories of his favourite pictures; to write by sending messages to others about what he has found out for himself, or wishes to communicate to them; to cipher by actually counting his jackstones and marbles and pocket-knives, by adding his gains and subtracting his losses, by multiplying his own profits and dividing the other fellow's, and he will master the Three R's without so much as the sight of a bench or the taste of a stick.

Let every family have its own garden, with sand-

heap, swings, and tool-house, with carpenter's bench and plenty of tools to dig and hack with and ground that can be dug and hacked to heart's content without blame or criticism. Where this is impossible, let six or a dozen families club together and provide a play garden, with proper equipment, for the joint use of all their children. Let them pick out some sweet-tempered, sensible, healthy girl, with a good accent and attractive manners, who loves children and has been trained to direct and assist in their games and sports, and turn over the whole brood to her for from two to five hours each day.

Let the regular meeting-place of the "club" be at one of these play gardens and let this be equipped with a clean, well-lighted, airy barn or shed, in which plays or games can be carried on in wet or stormy weather. Then once or twice a week let a good-natured local carpenter, or some manual-training teacher, give lessons in the use of tools and the building of boxes, toys, and other contraptions, to both boys and girls. Let them be given gardens and pet stock, which they shall take care of, and be responsible for, under the guidance of some one competent to teach them.

Primary literature and history can both be taught in the form of the story, regular visits can be made, as the weather permits, first and most important of all, to woods and brooks and fields and gardens in the neighbourhood; then if the club be in a small

town, or the country, to poultry-yards, dairy-farms, sheep-shearings, and harvest fields. If in a city, to zoölogical gardens, botanical gardens, museums, markets, docks, etc.

Then if the children be encouraged to compare notes with, and describe to, one another what they have seen, in clear, simple, correct English, to write down their impressions, to make pictures of them, sing the songs, or chant the poems, or dance the dances appropriate to the place and things, the season and time of life, they will make a healthful, natural, happy progress and growth toward even the highest standards of intellectual and moral accomplishment, with far greater certainty and comfort and just as rapidly as under our present, unnatural indoor, forcing system.

Until, however, this educational millennium comes, and the education of a child is adjusted to his growth needs — making the great outdoors his schoolroom, teaching hand and foot and eye and body in the sun and the wind, the fields and the streams, with excursions to shop and factory and museums and places bustling with the world's work, all in the companionship of its own kind and with sympathetic supervision — we can do much to adjust him to the school and to watch out for signs of friction and pressure.

The first and most significant sign is the appetite. Any child that does not eat, and eat at least once

a day, like a saw-mill, with eagerness, avidity, and an audible noise, unless restrained, is not healthy. He ought not to eat like a pig, of course, but he should want to. Similarly, a child that is fussy and particular — finicky — in regard to the kind and appearance of his food, and with more dislikes and antipathies than likes, is not in a normal condition and cannot grow properly until his squeamishness is corrected. This can often be done by giving him real foods, such as his instincts call for, cooked in an appetizing manner but very frequently the lack of appetite has nothing to do with his food or his digestion as such, but is caused by over confinement indoors or by lack of sleep. If your child has no appetite, do not fuss at him or pile things on his plate or try to tempt his appetite with dainties; send him to get one — to the woods, or the garden, or, if necessary, to the gutter — anywhere where he will meet other young animals, human and otherwise, and roll and tumble and fight with them. Pay no attention to his school hours meanwhile — he will catch up all the ground he has lost and make much faster progress when he gets to eating properly and growing once more. If this prescription fails, look carefully into the amount of sleep the child is taking. If this, at his age, be less than ten hours of sound, solid, unbroken sleep, and especially if the child be thin and nervous and excitable, unhappy unless he is perpetually doing

something, and driving eagerly from one thing to another, then devote your energy to seeing that he gets all the sleep that he can possibly be induced to take in the twenty-four hours. No child ever yet slept too much, and it is little short of crime to make any child get out of bed in the morning until he is widely and vividly awake — indeed, until you cannot keep him under the bedclothes any longer. Make him lie in bed every morning until ten or eleven o'clock if necessary. Put him to bed again at any time that he appears to be fretful, or cross, or tired, or dissatisfied with his surroundings and himself, and get him to bed by at least eight or half-past in the evening; and you will be surprised how he will plump out and his nerve tantrums subside and his appetite come back

Peculiarities, oddities, and crankiness of disposition in children should be watched for with a vigilant eye. The natural, healthy child is a sunny, even-tempered, easily pleased, happy-go-lucky little mortal; and when he begins to be difficult to get along with, it is a sign neither of original sin nor of pure perversity, but of something fundamentally wrong. It may be, of course, that you are setting him a bad example. If so, you cannot stop it any too soon. Nine times out of ten, however, bad temper, waywardness, fretting, and uncertainty of disposition in children are the symptoms of some disease or disturbance of nutrition. Look well to

their appetite, their food, their sleep, their eyes, their ears, their teeth, and you will usually find the cause of their "fractiousness" in some one of these.

In a small but very important percentage these peculiarities of temper, fits of crying on slight provocation, tendency to mope by themselves and avoid other children, morbid conscientiousness, worry over little details of work or play, and above all things early piety, are signs of a deeper inherent defect of disposition and balance, which, if unchecked, may result in some definite form of permanent mental disturbance. Eight tenths of those who become insane in later life were "peculiar" as children. Fortunately, at least three fourths of those who are born with a tendency to lack of balance can be trained and educated to overcome it. The prevention of insanity should begin before the seventh year. Fully one half of the household discomforts and family difficulties and unhappiness in later life are due to the neglect or injudicious treatment of little, inborn peculiarities of this sort which, though they have never gone the length of complete unbalance, were not trained out or corrected in childhood. This sort of latent insanity and eccentricity causes as much suffering and unhappiness to humanity as any known vice; and it is most likely to occur in the children of the overpious, the unnecessarily good, and the disgracefully rich.

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As during the child's larval stage in the nursery, so now during his caterpillar one in the kindergarten, the best physical test that can be applied is to weigh him at least once in two months. If he is not gaining steadily in either weight or height, and generally both, there is ground for investigation of his condition and habits. Sometimes children, particularly at this age, will grow fairly rapidly in height with comparatively little gain in weight by a curious sort of readjustment of their already acquired bodily substance — taking it from their breadth, as it were, to add to their length. But even this should not be allowed to occur for more than six months at a time without relieving the child in every possible way from any pressure of school, or of regularity of hours according to any fixed scheme which he may happen to be under.

Another thing to be watched closely is the expression and colour of the child. *A healthy, growing child is happy, most of his waking hours, and looks it.* A child whose eyebrows are knitted in a perpetual frown generally has eye trouble, or headache due to digestive trouble, or lack of sleep, or perhaps nasal obstruction. Habits of scowling or looking careworn should be promptly referred to the family physician. If the child has a frequently opened mouth or even, without this, has thickened or hanging lips, which are cracked in the morning, with small nostrils and a vacant, heavy expression,

adenoids would at once suggest themselves, and should be looked for by a competent specialist.

If a child sits about with a flushed face and either dull or bright eyes, half covered with drooping lids, holds his head as if it were a burden to him and mopes, it is well to suspect a fever of some sort, possibly only a common cold, possibly one of the mild infections of childhood, such as measles, whooping-cough, chicken-pox, or scarlatina. In any case, he should be given a warm bath and at once put to bed in a quiet room by himself, and if he does not fall asleep, or is not markedly better in six or eight hours, the family doctor should be sent for. No cold or fever in a child is so trifling that it should be neglected. Nine tenths of all the serious diseases and disturbances of childhood begin with the symptoms of a common cold, and common colds themselves, in the mass, cause more damage to hearing than all other diseases put together, and as many injuries to the heart, kidney, liver, and nervous system. A stitch in time here saves not merely nine but ninety.

CHAPTER VII

OUR IVORY KEEPERS OF THE GATE

A MAN is known by the teeth that he keeps. The worst thing that can happen to our teeth is for them not to have enough to do — it is the worst thing that can happen to us also. Spiritualized and cultured as we have become, we still fight the battle of life with our teeth, though we no longer chew our enemies' ears or throats. In the beginning, the mouth made the face. Where it was located began the head-end of the organism, then the smelling department settled itself just above it, the lookout department just above that, the ears next, and finally the brain to boss the whole. The mouth already has done as much for the race in the prehistoric period as the sounds which issue from it have done since. The psalmist who said, "Keep thy mouth with diligence," was a good dentist as well as a sound philosopher. If he had added, and with a tooth brush, he would have been strictly up to date.

Our teeth still make our expressions, give to our faces the air of firmness or weakness, determination or irresolution, make their shape oval, tri-

angular, or square, give us the wolfish, the rabbit-like, the horse-like, or the bull-dog expression. Many of our most important expressions are teeth expressions. When we smile we show all our pearly weapons resting peacefully in the sheath, as it were; all our cards are on the table; there is no knife up our sleeves and no whiskers to deceive you. When we frown, we inevitably clench our teeth together and set our jaws, as if we were locking them in the body of the enemy. When we sneer, we wrinkle up one side of our upper lip to bare the big ivory dagger, our canine tooth, or rather the place where we used to carry it.

Is it any wonder that when such foundation stones of the body go wrong the whole body machine is jarred askew? Bone cored, enamel coated and rock ribbed as the hills, as they are, they are more absolutely under our control than almost any other structure in the body. Neglect them, and they decay at once. Give them proper attention and they will keep on repairing themselves for forty, fifty, sixty years. The first thing is to give them plenty to do, for more reasons than one. Poor food means poor teeth. Look at them with a biologist's eye, and you will see that they contain samples of every known kind of teeth possessed by any animal — incisors, canines, premolars and molars, flesh-eating, grain-eating, nut-eating, fruit-eating, carnivorous, herbivorous and omnivorous.

Moral : Give them all something to do and often!

Savage teeth are better than civilized in early life because they get more to do, from cleaning fish and killing snakes and chewing walrus hide to gnawing off roots and digging for grubs in rotten logs. They decay, however, sooner than ours do, because the food supply is scant and coarse and uncertain.

Give children plenty "of roughening" to chew, which Heaven knows they are willing enough to do — and they will get the pearly vigour of the savage tooth with the endurance of the Caucasian's. Above all, the food should be of such a character as to give exercise and massage to the gums. Part of this can be given by plenty of coarse food — in addition to real food, not as a substitute for it — and part by intentional and vigorous friction with the tooth brush. To brush the gums well is half the value of brushing the teeth.

The next thing is to keep them thoroughly clean and leave no particles of food between them to decay; and in the process give off acids and enzymes, which attack and eat into the teeth. The mouth makes a beautiful hot house for "bugs" of all sorts, but they have got to have something dead to live on. If the gums and teeth are kept thoroughly alive and vigorous, they can get little foothold, but if some carrion in the shape of scraps of food be

left them to form a nest in, then they can develop a vigour which will enable them to attack the teeth and gums. The food most likely to set up this dangerous kind of "bug breeding" is starch, because the fluids produced by its fermentation are acid, while those produced by the decay of meat are alkaline and have little injurious effect upon the teeth or gums, though they are more offensive to taste and smell.

Every animal, man included, hangs on to existence by his teeth. If you know the teeth, you know the animal. We talk of the value of art as a means of self-expression, but it is not to be mentioned in the same day of the week from this point of view. There is, however, the "Alice in Wonderland" question which has been gravely propounded throughout the centuries with regard to mind, whether the man expresses himself in his teeth, or the teeth express themselves in the man. They certainly have a large share in determining his expression in the facial sense. Our jaws are simply arches of gristle, hardened by deposits of lime, à la coral reef, into bone for the purpose of carrying and socketing our teeth.

The feeble, retreating, sheep-like chin, the weakly amiable, rabbit-like, projecting upper jaw and lip, the rounded angles of the jaw in the child and woman, and the square bull-dog projection of the man of grit and aggressiveness are all alike func-

tions of the size and shape of the teeth that they have to carry.

The loose wrinkled lips, baggy cheeks and sloping angles of the jaw of the old man or old woman, which give such an air of collapse and indecision to the countenance, are due to the absorption of the bone from the loss of the teeth and the wasting away of the bony grip-hold of the great Masseter muscles.

The enormous importance and significance of the animal's teeth need of course no argument. No other single feature is so illuminating as to his character and habits, nor so universally relied on for purposes of classification. The reason of course is obvious. For when you look at an animal's teeth you can tell not only what kind of food he eats, but how he catches it and kills it and also how he defends himself against attack. That animals which have huge, sabre-like canines, small incisors, and jagged, saw-tooth molars and premolars live upon flesh which they capture alive, and defend themselves from attack with their teeth, is of course as obvious as that two and two make four. On the other hand, some animals have lost or dwarfed their canine daggers, broadened their molars, or grinding teeth, into veritable millstones, and retained their incisor teeth in only the lower jaw, cutting their grassy and leafy foods with the chisel-like edge of these against a cartilaginous

pad in the upper jaw, like the sheep and the cow. Evidently these animals do not live upon flesh, or catch their prey struggling and alive, or fight with their teeth, but with horns which have developed for that purpose.

In short, so exquisitely are the teeth of an animal adapted to his vital demands and his habits that a whole animal can be reconstructed from the discovery of a single tooth. This has been done repeatedly by paleontologists, and the fossil of the remainder of the animal, afterward found, fitting the description in every important detail.

Though our own teeth have been built up in every line and detail upon precisely the same principles and by the same methods of response to demands as obtain all through the animal kingdom, they are no longer of such dominant and exclusive vital importance. For ever since we assumed the erect position and left our forepaws free to hurl the spear and swing the club and grasp the tool, free from the dull mechanical duty of propping or supporting the body, the hand has taken the dominant place as the food getter and the fighter.

Indeed, this is precisely what has landed us in the trouble we imagine ourselves to be in as regards our teeth. The developments of the hand have enabled us to outlive our teeth. Only that is the sole reason why there is so much wailing over their alleged decadence. If we simply peacefully

died in times of famine, when our teeth became bad, as we used to all through the stages of savagery and the earlier ones of barbarism, we should have had comparatively little need for the dentist. But we don't seem to take kindly to the idea of solving the problem in this way.

We have as perfect and lasting a set of teeth as any animal living. Only we don't give them enough exercise in the first place, and insist on outliving them in the second, and then turn round and blame them. Our impressions about some things are most extraordinary and naïve. We are quite sure, because we have suffered from toothache and had gumboils and cavities come in our teeth, that there is something peculiarly rotten in this human "state of Denmark" that is to be found nowhere else in the animal world.

But this is simply and solely because we have never been a dog, or a cat, or a horse, or a rabbit. Every known form of disease of the human teeth is to be matched or paralleled in some form of animal. Any veterinarian will tell you that, next to the hoofs, the part of a horse that gives him the most trouble is the teeth. Any dog fancier can relate to you histories of abscesses of the gum, loosenings and sheddings of the teeth, ulcerated gums, gumboils, etc., in his canine pets and charges, by the dozen and the score.

Nearly all wild animals when confined in zoö-

logical gardens are apt to develop trouble with their teeth, and iron instruments — or more properly, machines, like those used for pulling up stumps by the roots in clearings — have to be invented for extracting the teeth of elephants and rhinoceroses. Whenever a particular beast, tiger or camel, mongoose, zebra, tapir or what not begins to show signs of restlessness and cry out with pain, the first thing the keeper suspects is the toothache. Precisely to what extent these conditions occur in the wild state we do not know, for the obvious reason that so few wild animals come to any post mortem table, except that of the stomachs of their natural enemies.

Diseases of the teeth and jaws are found in almost every variety of wild animal in a state of captivity. These, however, are not as frequent as under domestication or civilization, partly of course from the grim reason that whenever an animal reaches a certain degree of disability in its teeth it is apt to either starve to death or to become so much weakened by starvation as to be readily captured by its pursuers.

Zoölogists, veterinarians and breeders of pet stock agree that nearly all varieties of animals suffer much from diseases of the teeth, and would develop them in almost as high a degree as man if they were placed in an environment that protected them from starvation on the one hand and destruction on the other, when their teeth fail them.

Another thing which we have universally and commonly taken for granted, upon utterly insufficient foundation, is that modern teeth are becoming degenerate, are giving way under the strain of civilization, and are far worse than those of the savage. This discouraging conclusion is based upon a number of considerations, most of which have the same broad and substantial foundation, and that is our massive and exhaustive ignorance of the actual facts.

The supporting facts commonly cited are:

First, that our teeth are decaying earlier and more frequently than they did a few generations ago; that we support at least five times as many dentists as we used to, and that our teeth *must* be going to decay, first, because we take so much of their proper work from them by mincing and cutting our food, and, second, that we overheat them with hot beverages and dishes, or injure them by cold drinks or creams — according to the prejudice of the observer.

Scarcely one of these alleged "facts" has a leg to stand on, when we come to examine it scientifically: First, for the broad and conclusive reason that we have absolutely no accurate data as to the condition of the teeth two or three generations ago, the diseases of teeth in savages, or the actual effects upon our teeth of the strains to which they were submitted in savagery, and those to which they are submitted in civilization. In fact, most of the ac-

curate data that we possess point in the direction of the same conclusion as regards animals' teeth, and that is that the modern tooth is in no important way inferior to any other human tooth that has preceded it. But here up will go hands and eyebrows of remonstrance at once. For have not all of our travellers, explorers and other writers of fiction commented on the "gleaming ivories" of the negro, and the broad, healthy white teeth of the Indians, Malays and uncivilized races generally? This may be admitted at once, and we will volunteer the further information that one of the criteria of classification of human races is the size of their teeth, particularly of the front or incisors. This divides them into three groups, called *megadont*, *mesodont* and *Microdont* (big-teeth, middle-teeth and small-teeth), with the savages in the big-teeth class.

However, both of these statements are based on misconceptions, the first of which you can readily test for yourself, if you are sufficiently interested to do so, by asking the first negro of your acquaintance that you meet to let you look at his teeth. Your first impression will be that he has unusually broad, white, ivory-like teeth. The first part of this is correct: they are broad. The second, however, is chiefly due to the contrast with his black or coffee-coloured skin. And when you get him to open his mouth and evert his lips so as to throw his teeth simply into contrast with the red mucus membrane

you will see that in eight cases out of ten, instead of being whiter than your own, they are yellow. And this is even more strikingly true of Indian and Mongolian teeth, both of which are *megadont.*

As to the second impression, that the teeth of the savage are comparatively free from disease because he lives a natural life and uses them vigorously, this is simply part of the ancient "noble savage" delusion. Any dentist who has practised extensively in the South, or in any place where there are considerable numbers of negroes, will tell you that their teeth are frightfully subject to diseases of all sorts, just like their white neighbours. Granting this, it may of course be retorted that this is due to the abnormal condition of civilization under which they have been compelled to live. But here comes in another line of evidence, and that a rather unexpected one.

It has been a matter of common observation among anthropologists and anatomists that the teeth of the skulls contained in the various collections in the Continental and other museums, and those examined in the catacombs and other burying grounds, were very frequently missing or diseased. But it was only some fifteen or twenty years ago that expert dentists began to pay attention to this problem. One of these, since dead, Doctor Patrick, of Bellville, Ill., examined a large series of skulls of alleged Mound Builders and other American Indian

tribes with reference to the condition of their teeth, with the astonishing result of finding first every known disease and deformity of the teeth present which is to be discovered in civilization. Decay of the teeth themselves, abscesses of the gums, wasting away of the gums with loss of the teeth, which had evidently occurred in life, malocclusions and malformations of all sorts were not only present, but occurred in as large percentages as are found in civilized mouths to-day. There is little new under the sun, after all.

Next, as to the number of dentists that we support: This is so ancient and obvious a delusion that it is scarcely necessary to more than refer to it, as it would apply equally logically to the number of doctors, of lawyers, of policemen, of spectacles that are worn, of baths, of sewers, and in fact of all the developments of civilization. It is now universally proven that the civilized man is healthier, longer lived, bigger, more law-abiding, less criminal, cleaner, and in every way better than he was even a hundred or two hundred years ago. Dentists and doctors are now devoting fully one third of their time to the protection and improvement of human health and life, and it will not be long before they are devoting the majority of their time to this purpose instead of mere cure or repair. As to the idea that dentists are in any sense a modern invention, there could be few things more ludicrous

Almost every race which has risen above the level of barbarism and many still in stages of savagery, have more or less crude methods of repairing or substituting teeth. Fillings of various kinds of metal, pegs of ivory and of bone are to be found in the teeth of barbarous races from almost the very dawn of history, while all the civilizations of antiquity had quite elaborate and successful systems of dentistry, both extractive and constructive. Furthermore, the traditions of all the savage tribes are full of references to various diseases of the teeth. Longfellow, in his ballad of "Mog Megone," asks the question:

> And is the Sachem angry with Ruth
> Because she cries with a pain in her tooth,
> Which would make a Sagamore jump and cry,
> And look about with a woman's eye?

With a foot-note to the effect, that, stoical as the Indian was in the endurance of pain, and high as a point of pride as he placed it not to display any signs of such, the one exception was pain of the toothache. The warrior of renown might be permitted to wince and even cry out loud, under this agony, without losing his reputation for manliness and courage.

A similar set of misconceptions is found to underlie two other popular beliefs on this question: That the diseases of the teeth are peculiarly the diseases of civilization, because they occur chiefly in the upper or wealthier classes of the community; and

that American teeth are peculiarly subject to decay, as compared with those of the European nations. Ever since dental clinics began to be established in connection with our hospitals and dental schools, for the free treatment of diseased conditions of the teeth, it has been abundantly demonstrated that these conditions are not only no less frequent among the lower or poorer classes than the higher, but that they are even more so, on account of the poor food, bad housing and utter lack of hygienic care of the mouth.

Our ignorance of the diseases of the savage and of the slum dweller was, up to twenty or thirty years ago, almost equally profound and complete. As to the badness of American teeth, it is true that there are far fewer dentists in Europe per thousand of the population, and that fewer people there wear artificial teeth, but this is simply due to the higher standards of efficiency and perfection of our dental apparatus demanded on this side of the Atlantic. Men and women of abundant means and good social position can be seen daily on the other side of the Atlantic, going about with a mouthful of teeth that an American hired girl wouldn't put up with.

So that, after a careful review of all the evidence pro and con, we are, I think, justified in the consoling assurance that the civilized child, our child, starts out in life with as good a set of chewing tools as any

other species of animal, or any other race or condition of men in the world.

The problem is how to preserve his birthright. The first thing to be remembered is that it isn't necessary to assist the teeth in any way. All that they require is a fair field and no favours, and a chance to help themselves. They will sprout through the gums as irresistibly and inevitably at the proper period as the blade of grass will push its way up through the soil in the spring. There is a story of an individual who had had many adventures with wild animals in strange countries, and had been lionized until he was rather sick of it. His most admired feat was an imitation of the cries of the different wild animals that he had met. And almost everywhere he was invited he was sure, sooner or later, to be called upon for this imitation. Being naturally a modest man, he tried to get out of this display in every way possible, but, finding his protests of no avail, he hit upon a plan to end this buffoonery by diplomatic means.

At a largely attended social function, of which he was literally the "lion" in more senses than one, at an appropriate time in the proceedings his hostess begged him as a special favour to give one of his superb imitations of the wild animals at night. He consented with suspicious promptness, and began with the hooting of the owl. This was wonderfully realistic and much applauded. The scream of the

panther. This made several of the ladies in the audience shudder. The roar of the lion, a thunderous volume of sound that sent the small children scuttling to hide their heads in their mothers' dresses. Then *the noise of the grass growing* — an even more thunderous roar.

In a perfectly healthy child, the teeth will produce just about as much pain as the grass will make noise in growing. If he has any trouble with them at all, or even becomes aware, or makes his mother or nurse aware, that he is cutting them, except by the sight of their ivory gleam as they appear through the gum, it is either because his digestion is in bad condition from improper food, or he is suffering from some mild infection, or because he has bruised his gums upon the ridiculous objects of stony hardness, like ivory, coral, etc., which he has been given to "cut his little tussy-pegs on." Most of the disturbances of digestion, the rashes, fretfulness and broken sleep, which are attributed so confidently by Sarah Gamp and her descendants to teething, are due to errors in diet, to the various kinds of solid food which the child is just beginning to display an appetite for; to irritation from the filthy and often infected fingers which are thrust into his defenceless mouth, to see if the teeth are coming through, or to the slight infectious diseases, colds, etc., which he begins now to be peculiarly liable to.

The best remedy is the proper regulation of his diet and bowels by competent advice, letting his gums and mouth severely alone, except to allow plenty of cool, pure water and a proper supply of food that contains elements upon which he can give his jaws the exercise they are beginning to crave. The effects of teething-rings, corals, "comforters," and all artificial objects on which the gums are to be exercised and the teeth to be cut, are almost exclusively bad. If they are hard, they bruise and injure the delicate gums of the child. Whether hard or soft, they get him into the bad habit of perpetually wanting to have something in his mouth to mumble or chew at. They are continually being dropped on the floor, used to curry the dog and stroke the cat, smeared over everything that comes within reach, and then thrust promptly back to the mouth again. As germ collectors, they have few equals, and no superiors. Let the child get the exercise for his jaws which he begins to crave eagerly at this time, from tough and resisting articles of food, such as crusts, pieces of tough meat, or meat gristle, which are too large for him to swallow; or the round end of a chicken or mutton bone, with some fragments of meat attaching to it. All of these are entirely free from objection on the grounds of indigestibility, since meat in all its forms can be digested by the infant's stomach from the earliest stages, being simply another form of milk. And the

starch in the crust of bread has already been dextrinized by the heat.

Supposing that the child has been placed upon the proper diet, both as to balance of different food elements, and as to offering the proper amounts of exercise to his gums and budding teeth, and guarded as far as may be against putting filthy or infected objects into his mouth, the next most important consideration is to keep his nostrils clear of obstruction, so as to prevent his becoming a mouth breather.

Colds and snuffles in a child should always be treated by competent hands. If this be thoroughly done, there will be far less likelihood of his developing post-nasal growths, or adenoids. These latter growths are far the commonest cause of deformities of the jaw, irregularities of the teeth, and disturbance of proper masticating relations between the upper and lower jaws. Further than this, by causing the child to breathe through the mouth they put the mucous membrane of the lips and the gums in a much more exposed condition, so that an irritated and congested condition of it is readily produced, while at the same time it is much more exposed to the attack of infectious germs and all the various filth bacteria.

If your child shows any signs of wanting to breathe through the mouth, or to suck his thumb, or to get the corner of the blanket or the sheet into his mouth

at night, by all means have him examined by a competent dentist or physician, or both, to see if his nasal passages are obstructed. If this obstruction be not removed, narrowing of the arch of the jaw, and disturbances of the alignment of the teeth are almost sure to follow.

Next in order is the proper toilet of the mouth. This should begin long before the teeth appear, in a thorough washing out of the mouth with cool water, to which has been added a little mild local antiseptic or a little soda, after each nursing, and later, after each meal. Then when the teeth come, they should be systematically brushed after each meal, with a small soft brush. As soon as any considerable number have appeared, so that serious chewing of the food can be carried out, it is advisable to brush not merely the teeth, but the gums as well. And this becomes more and more important as the age advances. The one disadvantage at which our teeth are placed under civilization, is that so much work usually performed by them in cutting into bits, tearing and grinding the food, is now carried out in the kitchen and in the mill.

Oddly enough, it is not the most exposed part of the teeth which is their weakest point. The crown, or visible portions which do practically all the work of biting, grinding, etc., have been insured against damage these millions of years past by a coating of enamel, or animal glass. This is one of the toughest

and most resisting substances in nature, being absolutely unaffected by any acids except those which will etch upon glass, and harder than any substances with which it is normally brought in contact, so that it will be chipped or scratched by nothing short of steel, or pieces of grit. The point where our teeth begin to decay is not where they are hardest worked, on their grinding or cutting surfaces, but below these, just where the edges of the gums touch them, at what is known as the "neck" of the tooth. Here is the weak spot, like the well-known one on the hull of the battle ship, between wind and water, where the armoured coating of the enamel no longer protects, nor does the bony socket of the gum reach up far enough to cover it. The other weak spots are the adjacent surfaces of the teeth where food débris can accumulate between them and the bottoms of the grooves on their grinding surfaces. The spots, in fact, where neither food, cheeks nor tongue can rub and burnish them.

One of the chief problems of modern preventive dentistry is to keep this lining margin of the gum both healthy and firmly and closely applied to the necks of the teeth. This process is largely brought about in animals by the coarseness and hardness of the food which they masticate, the tough leaves and grass and grain of the herbivora, providing a steady and constant massage of the gums, as well as the exercise for the crowns of the teeth themselves.

In the carnivora, the gnawing and rasping of the flesh away from the bones produces a tremendous amount of pressure upon, and what looks like really destructive violence to, the gum. This is one of the reasons why babies, kittens and young lions and tigers in captivity will do so badly if they are not well supplied with bones to gnaw at. But where all our starch food is both ground and cooked and much of it reduced to a pulp before it is put into the mouth, and our meat has its gristle trimmed off, its bones carefully cut out, and very often its fibres minced up into a pulp before it is put into the mouth at all, it is obvious that the chewing of our food, even if sufficiently thorough and prolonged, can give little or no vigorous stimulation to and massage of the gums. To furnish this is one of the principal functions of the tooth brush. And one of the modern schools in the dental profession now declares that it is even more important to brush the gums than to brush the teeth. Nor do they base it upon merely theoretic grounds. They have the fact accomplished to support their conclusion. Their claim is, and they have cases to prove it, that a child who has been properly fed upon milk and *solid* foods such as crusts, meat, hard biscuit, celery, apples, *not* slops or puddings, whose mouth has been protected from unnecessary external infection, whose jaws have been kept symmetrical and well developed by keeping the nasal passages clear,

can be brought through the period of the milk teeth, their supplanting by the permanent teeth, and the complete development of the latter, not only without toothache, or gumboil, but without the appearance of more than two or three cavities in even the milk teeth. Once launched in life with such a set of teeth as this, our health prospects are most encouraging.

Having once fairly ushered the permanent teeth upon the stage in good, workmanlike condition, at say fifteen or sixteen years of age (the so-called "wisdom teeth" do not count, being remainders left over from a previous stage of existence, real "intimations of immortality"), an interesting problem confronts us: What have we most to dread? The natural wear and tear of life and inherent tendency to decay, or the attack of disease? Here we land in the centre of a three-cornered field of battle from which the smoke has not yet sufficiently lifted to enable us to determine the issue. On the one hand, we have a minority of authorities who declare that on account of the inadequate amount of work left to be done by the teeth, the injudicious diet of civilization, and the general wear and tear of our modern struggle for existence, our teeth are doomed to decay, and carry the seeds of their own destruction, as it were, within them, like the "original sin" of the older theologies.

This position, however, has been pretty thoroughly

undermined, as we have already seen, except to the extent that it would appear probable that, since the average duration of savage life was under thirty years, and the average longevity even of civilized races has barely reached forty, nature, with her wonderful instinct for economy, is not going to waste time and material in manufacturing teeth which will last very much longer than the time for which they are likely to be wanted. As with our eyes, she will allow a leeway of say twenty-five to fifty per cent., and this would carry us to about the forty-fifth year as the period beyond which we have little right to expect our teeth to remain in good working condition.

The question, however, is still open to experiment, inasmuch as no considerable number of individuals have yet been carried through to that period with such scrupulous toilet of the mouth as to have avoided even a majority of the preventable diseases and injuries to the teeth and jaws. Teeth that have been kept in perfect condition up to say thirty-five years of age will probably be "good for" twenty or even thirty years longer. However, we need not be much surprised at anything which happens to our teeth after forty-five or fifty years of age, or bear any grudge against nature on that account.

This clears the field for the other two opposing armies to fight out their duel. This is hotly contested, one side holding that most of the erosions,

cavities and inflammations about the roots of the teeth and the gums are local diseases, due to the attack of different disease germs, which can be almost completely prevented by skilled local treatment and strict attention to the toilet of the mouth and asepsis generally. The other side holds that, while the gradual processes of decay, of ulceration and of erosion are participated in by bacteria, diseased conditions, or lowered states of vitality of the teeth and gums, due to morbid conditions of the digestion, blood and general system are the primary cause, and enable bacteria to gain a foothold and do their deadly work.

Both positions appear to have much to support them, and the truth, as usual, probably lies between the two. But at present survey, the heavier artillery appears to be on the side of the localists. To this extent both of them agree, and it is a good basis of encouragement for those who have teeth but fear that they must "prepare to shed them now," that a very large share of the ills to which our teeth are liable are due to the attack of definite and preventable disease. It is not too much to say that by a strict and careful attention to the toilet of the mouth, thorough brushing and cleaning of the teeth after each meal and at bed time, including the gums in the sweep of the brush, and the use of a diet which is not so hashed and pulped as most of our hotel and boarding house cooks seem to think ideal, as

large a share of the various forms of decay of the teeth and ulcerations of the gums may be prevented as modern sanitary measures will prevent of the infectious diseases.

We are rapidly coming to regard this local care of the teeth from another and a somewhat unexpected point of view. It has usually been assumed that its principal importance is in the extent to which it interferes with mástication. This is a real source of danger and, it may be pointed out, is one which is caused quite as much by painful, hollow and otherwise diseased teeth as it is by actual loss of grinding and cutting surface. But fully as important, in fact more so, from the modern point of view, is the extent to which these septic conditions of the teeth not only fail to add a sufficient amount of saliva to the food and carry out a sufficient amount of grinding but actually poison and infect it. An individual with an ordinary set of bad and partly carious teeth and spongy gums, with from one to a dozen pus pockets in them, is squirting into his food at every stroke of his jaws materials which are as healthful and wholesome for the peace and purity of his alimentary canal as so much rattlesnake venom. Fletcherism, with bad teeth, may mean the addition of some ten thousand germs per chew. And prolonged mastication with bad teeth can hardly be regarded as an unmixed blessing. When we further remember that Miller of Berlin, in his pains-

taking study of the bacteria of the mouth, isolated some forty different species, each of them counting its billions, which normally inhabited the human mouth, and that this includes several germs of putrefaction, half a dozen different kinds of ferments, two or three *staphylococci*, and not infrequently two or three of the *streptococci*, the germs of suppuration and blood poisoning, while in about ten per cent. of the mouths examined in the winter time, the pneumonia germ is to be identified, and in a smaller percentage, a germ which can scarcely be distinguished from diphtheria, it will be seen what a really vital problem it is to keep the portal of our alimentary canal in as nearly a healthful and surgically clean condition as possible. Many of the inhalation pneumonias, which follow the administration of ether or chloroform, are now believed to be due to the swarms of germs drawn into the patients' lungs from the cavities of the teeth, and the pockets of the gums. Not only so, but several of our most serious diseases of the alimentary canal and of the blood, notably the so-called "pernicious anemia," are now regarded by eminent authorities as caused by germs whose original landing place and foothold in the body are obtained in the mouth and gums.

The pious men of old, who advised us to "Keep thy mouth with diligence, for out of it are the issues of life," might have added to it — "and of death."

Many chronic dyspepsias and persistent bowel

troubles, mysterious and obstinate anemias, to say nothing of chronic rheumatism and gout are kept up by perpetual self-infection of the stomach and intestines by the foul and septic discharges of decaying teeth and ulcerated gums. We are even coming to suspect that some of our obstinate chronic bronchitises and winter coughs, with profuse and foul-smelling expectorations are due to the inhalation of sprays of these same germs in the paroxysms of coughing.

It is impossible to keep the teeth and gums too clean and sweet, both for their own sake and that of the rest of the system. Even if by so doing we cannot hope entirely to prevent their wearing away and decay, yet all that we do succeed in accomplishing is to the good from every point of view.

As to the effect of conditions of the general health upon the teeth, the problem is a more difficult one. There is, of course, no doubt whatever that various diseases of the general system express themselves in the mouth and gums. For instance, in anemia, or general deterioration of the blood, the gums become pale, spongy and inclined to bleed readily. In lead poisoning, they become congested and swollen and a bluish line, due to the deposition of sulphide of lead, is formed along their margins at the point where they touch at the roots of the teeth. In children who are fed too exclusively upon artificial and pasteurized foods, the gums become

spongy, pale, purplish in spots, bleed readily, and such teeth as are present become loosened in the condition known as "scurvy," which used to be the plague of navies and sailors upon long voyages, until a thoroughly balanced diet with plenty of fresh fruits and fresh vegetables was substituted for the half decayed "salt horse" and hardtack diet.

Those individuals who are subject to gouty symptoms and attacks are very apt to have a peculiar disease of the gums and alveoli, characterized by suppuration about and in the roots of the teeth, with sinking and recession of the gums, with ultimate loosening and loss of the teeth involved. This is known as "Riggs' Disease" or by the appalling term of *Pyorrhœ alveolaris;* though this and its pus absorption probably cause their gout, quite as much as their gout causes it.

In short, it is becoming more and more necessary for the dentist to be a general pathologist and a trained physician, specializing in the diseases of the teeth; and, on the other hand, for the physician to have some adequate knowledge of broader aspects of the problems of dentistry and of the hygiene and pathology of the mouth.

As to the direct influence of special diet, or particular food for the teeth, there is war of the fiercest and hottest upon every hand. One school, both of physicians and dentists, even declares that all the processes of the decay of the teeth and of the sup-

puration and ulceration of the gums are due at bottom to the outrageous overfeeding of our civilized diet, with the consequent production of uric acid and all its tribe. From the other extreme there comes the declaration that diet as such, or particular articles of food as such, have no effect whatever upon the teeth, except in so far as they may keep up or lower the general nutrition and vigour of the tissues, or produce disturbances of the digestion which will secondarily affect the teeth along with other organs of the body. The mass, however, of thoughtful practitioners of both dentistry and physicians, are inclined to take a middle ground. First of all, that the direct effect of the different kinds of food upon the teeth is comparatively slight, such influence as they may have being largely due to the fermentations which remnants left between the teeth or in hollows of the teeth, may favour or set up. From this point of view, meat is less dangerous than either the starches or the sugars, inasmuch as the bacteria which can thrive in meat, set up for the most part alkaline fermentations which do not attack either teeth or gums. On the other hand, starchy or sugary debris left in the teeth, set up very promptly highly acid fermentations, which freely attack any exposed surfaces of the teeth.

For practical purposes, nowever this difference may be disregarded, for the reason that neither

starches nor meats should be allowed to remain lodged between the teeth. Practically all food debris should be vigorously brushed out or sawed out with dental silk, or with light touches of the toothpick after each meal, or by finishing each meal with a crust of bread, hard biscuit, stalk of celery or an apple, which clean the teeth better than a careless brushing. Secondly, they are practically in accord upon the ground that the effect of a particular diet upon the teeth is very largely due to the effect upon the general nutrition and digestion of the individual and the exercise it gives the teeth. Broadly speaking, then, we come back to a clear and common sense ground: Eat plenty of such food as best agrees with you, to be determined by your own experience and the advice of your family physician. Include such materials as parched grains, nuts, unpulped and unhashed meats, salad vegetables, like celery, etc., as will give the teeth plenty of exercise. Chew it thoroughly, but not to excess, and do not for a moment imagine that by so doing you can gain any magic, life-giving property, or increase its nutritive value more than a fraction of a per cent.

Lastly, see that your mouth is surgically, scrupulously, aseptically clean, as nearly as it is possible, at least four times a day.

CHAPTER VII

THE CHILD'S SELF-RESPECT

THE child is born an egoist. If he was not, he would never survive. He is absolutely compelled to devote his entire time and attention to the business of growing up — in other words, to himself. But there is nothing small about this egoism. It includes the whole world in its scope — because he believes himself to be It. Everything is, or is not, according as it touches or doesn't touch him. He has no conception of anything outside of himself.

Emerson simply reverted to first principles, to the everlasting childhood, when he said, "I am the Cosmos, the Universe." The child would say it if he could talk, or were conscious of it.

Naturally this makes him a trifle selfish, in the sense of self-centred. He doesn't as yet know of anything else to centre about. How can we possibly expect him to recognize the rights or interests of individuals whose very existence he cannot yet conceive of? To the child under three, his devoted parents, his nurse, his playmates, are little more than so many features of the landscape. It no more

occurs to him to consider their rights or feelings, than it does to us grown-ups to allow the political rights of stumps or the fine feelings of sidewalks to enter into our calculations. His business is to grow at the expense of his surroundings, regardless of their feelings. If he doesn't, he is not healthy, and will never live to grow up. In other words, the child is simply provided by wise Mother Nature with those particular instincts and impulses, moral and mental as well as physical, which are needed to carry him through that particular stage of his growth. When he reaches the stage where other and broader instincts are needed, these also will develop.

Egoism, "selfishness," if you like, comes first. Altruism, unselfishness, later, but just as inevitably. It is the failure to recognize this latter fact, and the attempt to inculcate kindness, gratitude, self-denial at the time when they are not only unnecessary but unnatural that has made the tragedy of the moral training of many a child. If a child wants to give up its own way, and begins to worry about his little sins of omission and commission before eight or ten years of age, and usually up to twelve or fifteen, there is something wrong with him. Take him to a doctor.

The abnormally and precociously "good" children who weep over the sins of their parents, and pray for their little playmates, inevitably die young and go to heaven in the "goody-good" books. This

is one point in which Sunday-school literature is true to real life. The failure to recognize the absolute necessity, in the broad sense, the rightness and the morality of primary selfishness or absorption in self, has been the source of half our misunderstandings of the morality of the child. He is no simple little mass of clay or putty, for his teachers and parents to mould into any shape at their own sweet will. He is a sturdy, vigorous, growing shoot, with perfectly definite growth tendencies, which you cross at your peril, with a will of his own, and a definite goal toward which this tendency will carry him, which may even reach the level of that pinnacle of perfection, yourself, if you will only let him alone and not interfere with him too much.

The child is selfish — yes, but so is a lily shoot green. It ought to show some little trace or tint of white about it if it is going in a few short weeks to blossom out in the spotless purity of Easter. But it doesn't. Yet, cut down into the heart of it, and there you will find folded and packed away with the most exquisite skill, every petal, every sepal, every detail of that fragrant snowy bell that thrills our senses like a call from another world. You will have to take a microscope to find some of the details, but they are all there. Yet when the spear first pushes up through the earth, you could hardly tell it from a head of asparagus.

The blossom of the lily is for the continuance of the race, for the welfare of future generations. That blossom of human character which we call the higher morality, unselfishness, charity, is for the same ends and will appear, or attempt to appear, as inevitably at its appropriate time. To expect to find it full grown, or even visible in the bud, at a time of life when every energy is and must be concentrated upon the preservation and development of self is not only irrational but absurd.

We do not expect paternal feelings in a child of five. Why, then, should we expect any other of those race-regarding-impulses which we term "morality!" Even to appeal to the "better feelings" of a child of eight or ten, is often almost as irrational as the celebrated apostrophe of the emotional Irish barrister, who in the fine frenzy of the peroration of his plea for leniency on account of the gray-haired mother of the prisoner at the bar whirled on the Judge with the thrilling appeal: "Sirr! was you iver a mother!" To appeal to a child's better nature, while excellent in moderation, does little more than make a hypocrite out of him before his time. It is hard to get away from the idea that, because the child will need these altruistic qualities later in life, they must be present at the very earliest stage of his existence "in the germ" in such a way that they can be reached and stimulated, and directly caused to develop. In nine

cases out of ten, they are as far beyond the possibility of direct interference as the germ of the lily flower in the heart of its stalk. The only way that they can be stimulated to develop is by giving them a favourable environment. Give the soil plenty of nourishment and see that the sunshine and the rain have free access. Most of our (in the vernacular term) "previous" methods of inculcating morality and developing unselfishness, conscientiousness and self-denial in children are about as rational as picking the petals of the unfolding bud open with a pin, or injecting "plant-foods" into its heart with a hypodermic needle.

He has got your hair, and his mother's eyes and voice, and some of your little tricks of manner — and temper — now, and he is just as safe to develop your superb self-control and civic devotion and consideration for others, if you will only give him time and set him a good example. Meanwhile, preaching to him that he should possess these qualities, will expedite matters precious little, and, if not backed up by example, not at all. Remember that life and growth of all sorts are but a response to environment, and new responses can only occur as opportunity is afforded for them.

"But," says some one, "the child is born into precisely the environment in which he will grow up, which will surround him in his adult life. He is born into this twentieth century, where he will

continue to live." That is precisely where we misjudge. The child is *not* born into the twentieth century, but in the fortieth century B. C. He begins just where the race did, and he climbs every inch of his family tree from the grass up to the topmost branches. If we hope for any intelligent understanding of his little problems, if we are to get any sympathetic insight into his little heart, he must be regarded first as a kitten, then as a monkey, next as a little savage — all but the war-paint; then as a mixture of knight errant and free-booter; and last of all the sober citizen of a republic.

He is equally charming and delightful in eacn of these stages, except perhaps the last. What is most vital of all is that each one of them is the necessary precursor of the next. Check the irrepressive activity, utter irresponsibility, the merry enjoyment and delight, the sublime and unconscious selfishness of the kitten stage, and you stunt the possibilities of development of the later citizen and patriot.

The child lives in a world of his own, half real, half imaginary. And if we would recognize this, and try to see things from his point of view, we would save ourselves a world of unnecessary worriment, and many a heartache. Just so surely as the child is wholesomely and unconsciously selfish during his first five years, will he develop the germs of unselfishness in his third five years, under anything like

reasonable surroundings. And all our proddings and preachings and scoldings will not hasten the process a particle, but will infinitely bewilder him — poor little chap!

Having dispassionately recognized in the dry, white light of science the primary and essential selfishness of the child, the next step is to recognize our own. This is often just as unconscious, and just as colossal. We are immensely proud of and devoted to this little morsel of the "bone of our bone and the flesh of our flesh." There is nothing that we wouldn't do for him — except let him live his own life. We lay wonderful plans for his future. We are going to make such and such things out of him. He is to carry out the plans which we had dreamed of for ourselves, but now despair of accomplishing. A nice, cheerful encouraging prospect for the poor little tot, to begin with! And then because the poor youngster begins to show definite life and growth tendencies of his own, which cross these carefully laid plans of ours, we become indignant, and there is trouble at once. Surely we, with our age and experience, must know better than he does. But are we so overwhelmingly sure of that? Have we made such a brilliant and indisputable success of our life and career at every point that we feel competent to take absolute and unchecked control of his? How much do we know that we owe to inborn qualities which we inherited directly through our parents,

and how much to their formal teaching and training?

What we really reverence and love in the memory of our parents is what they *were* and what they *did*, not what they taught or preached. We can see now that they were kindlier than their principles, better than their ideals, and broader than their creeds. If you are worthy of your child's admiration and imitation he will find it out without having to be told daily about it. If you are not — then, heaven help you! For you can't hide that from him, by all the professions and precepts in the world.

There is another realm in which the selfishness which we reprobate so severely and strive so desperately to eradicate is not confined to the child. I fear that most of us, as parents, will be forced remorsefully to admit, if we search our own souls deeply and honestly enough, that, mixed with our pride and joy in our children, intertwined with our most unselfish determination to give them a great future, at no matter what expense of labour or privation to ourselves, there lurks something of a narrower sense of ownership, of possession, of power. Here at last is something that really belongs to us, that we can do with as we wish, and can mould according to our pleasure. Here is one human being who at least shall appreciate us at our true worth, admire and respect us as we deserve. Nobody else has ever done it yet, but that's all the more reason why he

should. Then, when this tiny piece of ourselves, this mannikin that we have brought into existence, have nourished and supported, fails to bow down and worship us — how bitter the disappointment.

When he disobeys our formal command, when he refuses to eat our favourite food, when he flouts our dearest views of life, how it hurts! Let us never forget, though, that the principal wound is to our vanity, to our self-esteem. Otherwise, why should we lose our temper and punish and scold him, or, what is almost worse in its effect upon him from sense of proportion and judgment, denounce him as "headed for a reform school," "sure to come to some bad end," or to "bring down our gray hairs in sorrow to the grave?" To make a child believe that he is a criminal and a lost soul on account of some trivial act of disobedience is crueler and more radically injurious in its effects than a thrashing.

I am afraid that we, as parents, even the most conscientious, on careful analysis will find ourselves compelled to confess that a pitifully large share of the demands for obedience, or the formal discipline to which children are subjected in their moral training is based upon the half unconscious demands of our own vanity. People shall see that our child will obey us promptly, even if no one else in the wide world will. His bringing-up shall be a credit to *us*. And our sole aim should be, that it may be a credit to *him*.

Probably the next charge that we hear made against the natural morality of the child is that he is "ungrateful." And to this we frankly plead guilty. But why? Simply because he doesn't know that he has anything to be grateful for, short of his twelfth or fifteenth year. Nor is it particularly desirable that he should. The young child takes everything that comes to him as a matter of right and of course, just as the plants do the sunshine and the rain and the soil in which they grow. And he ought to, if he is to be happy and healthy and growing. We know well what his birth and his upbringing, his care and his shelter have cost — in birth pangs, in toil, in anxious care, in self-denial. But how on earth can we expect him to realize it? Our conceptions are founded upon and absolutely limited by our experiences. Naturally his tiny past is utterly destitute of such experiences, or anything approaching them. He has, in the language of the pedagogists, no "apperceptive basis" for the conception of them. Why should we expect it of him?

It never occurs to the young child that his food, his clothing, his housing, or the furniture of his room cost money, or represent effort. And it is difficult even to make him believe that they do, because he never has occasion to purchase them for himself. He discovers at a very early day that his toys and his sweetmeats cost money, which if spent for them cannot be used for something else. And for them

he will evince a lively though rather evanescent gratitude. But for clothes, for school-books, bedding or table linen, not a particle. His attitude is shrewdly illustrated by the remark: "Don't give me gloves, or a fur cap, or a napkin-ring for a birthday present. I'd get them anyhow."

He is perfectly willing to love his parents, to admire them with an extravagance far beyond their deserts, to laugh at their little jokes and favourite stories, to accede to all of their reasonable and even to some unreasonable requests. But to demand that he should be grateful, at least for anything beyond "extras" and presents, simply confuses and puzzles him. Not even the favourite trick of comparing his condition with that of slum or beggar children carries much conviction. He is apt rather to admire the adventurousness and delightful freedom from fixed ties and grown-up interference generally exhibited in their lives, and at bottom cannot rid himself of the conviction that they really have by nature at least three square meals a day and a place to sleep, except at such times as they are exhibited hungry and shelterless for his benefit. The naïve remark of a little French princess when told that the peasants throughout her father's kingdom were starving to death was, "Why, how foolish of them! I would rather eat bread and cheese first!" is typical of the instinctive attitude of the child mind. It is inconceivable to him that any nice

little boy or girl shouldn't have plenty of uninteresting plain things to eat. Scarcity is a thing that he can only conceive of in connection with caramels and ice cream sodas. And I doubt if it is not wiser to let that conviction remain undisturbed until the hard facts of experience dispel it, as they will, all too soon.

Now that we have frankly admitted that the child is both selfish, ungrateful and often disobedient, it is time to set down the positive virtues that he possesses: In the first place, he is naturally truthful; and his instinctive inclination is to relate the event as it happened to him with the fidelity and mechanical accuracy of a reflection in the mirror. That is what his senses are for, to see, hear, feel things; his memory, to store them up; his language, to reproduce them afterward for his own benefit and that of others. It is the line not only of instinct, of all the impulses of past ages, but of physiological least resistance. Only one thing can warp this tendency, can divert this truth impulse, and that is fear. Fear, which, alas! we have too often ourselves introduced into his consciousness.

That the child is by nature irrepressibly affectionate, loving, full of good comradeship, calls for no proof to any one who knows children. He needs these qualities in his business, just as much as he does his selfishness and his aggressiveness. Millions of years ago it was found out by our ancestors, even

before they came down from the tree tops, that if they would prosper they must have their neighbour's consent in the form of his good will. Though they hated their enemy, they must love their neighbour. Moreover, the time when he needed these qualities in the highest degree was during the early stages of his individual existence, in the period of infancy. Since the helpless infant has to be taken care of, if he is to survive, it is almost necessary that it should be plump and pink and cute, and have a lot of engaging little tricks and manners about it. And when all is said and done, nothing is more engaging and attractive, more flattering to one's self-love, than a display of spontaneous affection on the part of some other human being.

Therefore, upon the coldest of evolutionary grounds, it is the business of the child to be affectionate. Of course in its earliest stages this affectionateness is like that of the flower for the sun, or of a kitten for cream. But it is a natural basis for the higher affections, for devotion, for kindliness, and if given anything like a favourable environment and a good example will develop into all of these. In short, our virtues are hereditary, older than we are as a race in fact. Our vices are acquired, a product of civilization, of education.

The one thing that will make a child a liar is cowardice — fear of the consequences of telling the truth. And these consequences, nine times out of

ten, which he dreads are the results of the wrath, more or less righteous, of those who are in authority over him. Now fear has unquestionably played in the past a large and important part as one of the motive forces of moral growths, as one of the influences to be appealed to in education. "The fear of the Lord is the beginning of wisdom," we are complacently told. But necessary and inevitable as this fear of the consequences is, in prompting self-restraint and moulding conduct, it is now universally admitted by thoughtful teachers and parents that it should be restricted to as narrow limits as possible in the training of the young child. Certainly no child should be made so afraid of any form of punishment that he will lie to escape it.

To the unspoiled, uncowed, unterrified child it goes as much against the grain to tell a falsehood as it does to eat salt on his pudding instead of sugar. To invent something that didn't happen is an unnecessary mental effort, in the first place. In the second, it lands him in a lot of trouble, making this new creation of his square with a lot of other obstinate facts that are sure to crop up. In the third place, it leaves him in the uncomfortable dread of being found out, when he knows that with the exquisite logic of parental discipline he will be doubly punished, once for committing the offence and once more for lying about it. Lying is the vice of slaves and cowards, and your child is born a

free man and a fighter. If he loses his heritage, it will be more often your fault than his.

This is not by any means to say that a child will not of his own accord make a statement which doesn't correspond with the facts. On the contrary, many children are born romancers, and positively revel in exaggeration and the rolling forth of romantic adventures which could never by any possibility have occurred to them — unless it be in some previous incarnation. These little wonder-mongers have such fertile imaginations and envisage things so clearly that are told to them, and gloat so over the pictures of battle and adventure which are spread before them in their gift books, recalling every tiniest detail and touch of colour in that photographic memory of theirs, that they have, I am convinced, great difficulty, when once fairly launched in pouring forth their delighted memories of what happened to them in the enchanted wood at the bottom of the garden, in distinguishing between their memories of what really happened to them and their even more vivid recollections of the things that they have read or been told, or seen in picture books. The cow that actually shook its head and mooed ferociously at them is a recollection not a whit more real to them than the dragon with blazing scales and fiery breath who almost swallowed them whole for supper.

But there is not a particle of vice in these prepos-

terous romancings, which are obviously on the very face of them incapable of deceiving even the most gullible. They furnish one of the most delightful occupations of childhood and, for the matter of that, of life — and the only harm in them is in the mild element of boasting and braggadocio involved, and the habit of leading the child to dwell too much in the clouds.

There is little fear, however, but that he will come to earth soon enough. Their greatest power for harm lies in the risk that some juiceless lath-and-plaster prig or moralist among the grown-ups that happen to surround him will choose to magnify his harmless vapourings into serious offences, and denounce the child as a "born little liar." Once call a child that, and you have gone a long way to make him one. So long as his romancings are indulged in solely for their own sake, and not for any specific, selfish purpose, such as to gain advantage, or escape a penalty, or discredit some one else, there is little need to worry about them. All things for him are bathed in the radiance of the "light that never was on sea or land." And the time will come all too surely and too soon when this will fade, and he will realize that there "has passed away a glory from the earth." Are you anxious to hasten the coming of that time?

Let him alone, except to laugh with him at his illusions, and poke a little gentle fun at them and give him time. He will become as monotonous,

as colourless and as uninteresting and parrot-like a reproducer of the dull, cold facts in the case, which you dignify by the term of "telling the truth," as you are yourself. If you had half his imagination you would lie, in the sense in which you accuse him, nearly as often as he does, from sheer exuberance of spirits.

But the greatest breeder of untruthfulness in young children is the habit, which, alas! it is so easy to fall into, on the part of particularly careful and conscientious parents and guardians, of surrounding their every activity, their every hour of the day, with an elaborate network of rules and restrictions and precepts. Some of these, though reasonable in themselves, hedge the child in at so many points that it is scarcely in human nature to avoid conflicting with them. Others are utterly absurd and irrational, and made by us far more out of regard for our own comfort and peace of mind than for the well-being of the child, such as many of the edicts against noise and boisterousness, and playing with water, or running on the grass, or climbing the trees, for fear that it will spoil his clothes. But the main point is that there are so many of them that the child can hardly even remember them all, let alone manage to observe them. And the chances are that, when suddenly pounced upon by an irate parent, or nurse-maid, who demands with fury in the eyes and sternness in the voice whether he has

been playing in the bath-room and dropped the glass on the floor, or taken the salt-cellar for a sand-box and heaped its contents on the table-cloth, he is exceedingly apt, on lightning-like impulse, to say "No." And when he has once said it, of course he is bound to stick to it from sheer perversity and sense of self-respect. Sometimes he may not even remember whether the particular offence has been committed. He has done so many things during the time which to him appeared equally natural and blameless that this particular offence against the peace of the commonwealth has not made much impression upon his memory. But very commonly I believe he will deny an accusation of this sort from sheer contrariness, just exactly as you would if some one suddenly accused you of having behaved in a cowardly manner, or appeared in a ridiculous light, or done a discreditable thing. Sometimes I think he has a positive sense that the action complained of was from his point of view innocent, at least in intention, and that it is none of your business to be everlastingly prying into his affairs and compelling him to give an account of everything that he does, or even thinks. Nothing will make a grown man or woman more furiously indignant, or ready to throw up a position quicker, than to be perpetually bossed and overhauled and interfered with, even though it be done in the friendliest of spirit.

We ought to respect the reserve, the individuality

and the self-respect of the child. Often a fib is but little more than his way of saying, "None of your business." As we recognize the truth of the proverb, "Ask me no questions, and I'll tell you no lies," between grown-ups, why not between grown-ups and children? Let us try and look at the matter a little bit from his point of view, before we give ourselves over to lamentations that any child of ours should grow up a liar.

The child is by nature honest, brave and affectionate. But how quickly these virtues develop depends much upon his environment. He is honest by instinct, simply because honesty and truthfulness mean squareness with the universe. His natural impulses are downright and straightforward, often to an embarrassing degree. The appalling frankness, fearless outspokenness and honesty of the *enfant terrible* have passed into a proverb. Nowhere else is there such a painter of

> The thing as he sees it,
> For the God of Things as they are.

It is the conventions of society and the insincerities of his training which make him fear to express himself, time-serving, and politic. His honesty, in the rational sense of regard for the rights of property, is also instinctive, but has its peculiarities. In the beginning, of course, it is naturally confined to respect for the rights of property of the only individ-

ual whose existence he recognizes, and that is himself. His idea of *meum* includes the universe as he knows it. But as he gradually grows to recognize the existence of other inhabitants on this planet he discovers that they too have similar rights, or, as he would perhaps regard them, privileges of possession and ownership which, however irrational he may consider them at first, he finds that it is the part of discretion to attempt, at least, to appear to believe in. Another step, and he finds that others will assist him to defend his tiny store of trappings and plunder against raids by a common enemy, on condition of his rendering similar service to them in a like emergency. When he has attained this, he has reached the full moral basis of the Sacred Rights of Property in this twentieth century.

"I will respect your rights, if you will respect mine, in order that we may both unite to defend ourselves against those who haven't any rights and, if possible, keep them from getting any," is the way he would express our business morality of the day.

In the beginning, of course, if he be hungry and sees food within his reach he will take it. But here he is only repeating ancient history and exercising rights granted by unwritten law to every child in primitive tribes. Only our higher civilization denies the child this inborn right to take food when he needs it. But he soon outgrows this, and finds

that honesty is the best policy, on the basis confessed by the Scotch elder on his death bed that he had "tried baith."

The child is courageous, because it is born in his blood, because it has been the habit of the race from which he is sprung for half a million generations back. The instinctive attitude, the native expression, of the child is confident, fearless. Most of the fear that is brought into his young life is brought there by our act and teaching. The ignorant, careless nurse-maid to whom we entrust him in his earliest years because all he needs is "just to be kept out of mischief" teaches him the fear of the dark, through the bogies which she assures him will clutch him if he leaves his bed in the corner of the nursery while she is downstairs and out of doors amusing herself.

By a similar charming mechanism, and for the same purpose, the woods become filled with bears and wolves that will devour him if he strays beyond the garden walls; the streets with bad men who will carry him off and sell him, or eat him; the streams with water kelpies and snakes that will pull him in if he so much as looks over the crystal brim. In other words, we deliberately try or permit him to be frightened into good behaviour, by peopling the world around, into which we do not yet want him to venture, with all sorts of shapes and terrors. Then we wonder that he is afraid of the dark and

are most indignant with him for objecting to being left alone at night after he has been put to bed. It ought to be made a criminal offence to put these ideas of horror, these degrading and demoralizing superstitions, into the mind of a child of the twentieth century at all.

Let the child retain his brave and beautiful confidence as long as he possibly can. Then when the troubles typified by these dark and gruesome tales of the underworld and the overworld really come he will have developed strength and resiliency to meet and bear them. But there is not the slightest advantage, either to morals or good common sense, in making him miserable over the awful things which, whatever we may believe about a future life, we are perfectly sure do not happen, and cannot exist in this. It is only a few centuries since grown men began to be free from this awful dread of impending evil, of a Resistless Fate, in whose clutch they were powerless. But we have outgrown it; and why should we insist on inflicting it by our own voluntary or permitted action upon the new generation?

CHAPTER IX

BRICK WALLS AND THE GROWING CHILD

THE poet assures us that

> Stone walls do not a prison make,
> Nor iron bars a cage;
> Minds innocent and quiet take
> These for a hermitage,

Yet there is something fundamentally incongruous between a healthy, growing child and a room with four walls. Even though the window openings in the aforesaid walls be accurately adjusted to equal or even exceed one fifth of the floor space; though their remaining surfaces be opened to precisely that tint which will soothe his retina and stimulate his soul; though the window seats be filled with flowers and gold-fish bowls; though the light be cunningly trained to fall over the left shoulder, and the temperature miraculously maintained at a pitch of 68°, which, like the law of the Medes and Persians, "changeth not," yet will it remain a prison to the eye of the unspoiled young human animal. A gilded and well-ventilated cage — but a cage nevertheless! You may be able to make him forget

it for half an hour, or even an hour, but seldom beyond that. And why should you?

You can tell a child in an hour more than he can work out, or test to his own satisfaction, in a day; and he can tell you all that is of importance about what he has done in the day before, and all the deductions he can profitably draw from it, in another hour. So why confine him in the schoolroom for longer than these two periods? He grows by living, and he learns by doing; neither of these can be done as well in the schoolhouse as elsewhere. Is there any good and valid reason why schooling, which usurps and dominates the period of our most rapid growth — and should be an aid to that growth — should be so exclusively carried on indoors?

The trouble with institutions is that they do not die when the men who invented them do; and with buildings, that they last longer than their builders. Jehovah was most wise when he buried Moses's stone tables of the law with him, where nobody was ever able to find them again, and would not permit his chosen people to have a permanent building in which to worship, for eight hundred years. The letter always becomes stronger than the law that it preserves; the building greater than the purpose for which it was built. Our present system of education suffers under a positive obsession — a very nightmare of schoolroom.

It must be frankly admitted that the schoolroom

has, and always has had, two distinct functions — one, to keep the children out of mischief, the other to teach them something. The heaviest and most irksome part of the teacher's duty to-day is nursery-maid work. Schoolrooms are still places of confinement; indeed in the earlier days were more of this than founts of learning. In the Dames' Schools and Hedge Schools of a century ago luckless little tots were kept sitting for hours at a stretch on benches where their feet could not touch the ground, with little or nothing to do but drop asleep and fall off.

While upon one side of its pedigree, so to speak, the teaching profession is of the highest and noblest lineage, upon the other side, alas! it harks back to a very different kind of ancestry — some toothless old crone who was too decrepit to do anything more strenuous than to keep the babies out of mischief; or some undersized weakling, or even cripple, who was too feeble to work in the fields, or fight in the wars. Of course we have long since abandoned this principle of selecting teachers, just as the English gentry no longer follow the rule that "the fool of the family goes into the church"; and the time of the children is now as fully and intelligently occupied as that of convicts in a model prison. But traces of the ancient régime still survive in the facts that the teaching profession is the unskilled intellectual labour market, and the school day is still planned upon the principle of covering all the

time of the child, except the hours required for meals, chores and running errands, regardless of whether the work of education might not be better and more profitably done elsewhere.

So heavily has the schoolroom obsessed us that the mere spending of five hours a day within its Sacred Walls has come to be regarded as a virtue and an end in itself; and the question of the new education is how much of the work that is now done in the schoolroom could be better done in the garden, the playground and the shop? Its practical problem is how to reduce a part of the schoolroom to solely that portion of the work which cannot be better done elsewhere. And it is coming to be the consensus of opinion of thoughtful educators, of careful child students, as it has long been that of the physician and the biologist, that this would mean a reduction of present hours by at least one half, if not two thirds.

But the question will be raised at once: How can we then possibly complete our inspired curriculum and reach our Sacred Standards at the required time? Surely, if a given amount of work can barely be done in five hours a day, only half that amount of work can be done in two and a half hours a day. This was the logic of the old education — that of the new is different!

Even in the world of labour it has been discovered that the apparent paradox holds good;

the shorter the hours, the more and the better the work done. The shortened schoolroom day can be abundantly justified on two broad grounds: First, that as the child's brain is part of his body and grows with that body and in response to its needs, whatever time is necessary to keep that body healthy and vigorous and growing will increase the rapidity with which the child learns, and is to be regarded, broadly considered, part of his education. The second, or internal reason, is even more important, viz., — that instead of the purpose of education being to treat the child as if he were a bushel basket, or a milk bucket, and fill him up with so many quarts or so many gallons of information, so that his intellectual contents will reach a certain level at the end of each year until he is full up on Commencement Day — its real purpose is to develop the child's powers so that he will be able to acquire information, draw correct conclusions from it, and utilize it for himself. The best way yet devised of doing this is to give the child an interest in his work; to kindle in him, as Locke quaintly expresses it, "a liking for learning," so that he will continue his own education by his own volition, and work with his teachers and instructors, instead of against them. For the discipline and obedience of the old education, the new would substitute enthusiasm and initiative. Both of these can be cultivated far better outside of the schoolroom than in it.

It is as natural for a child to learn as it is for him to grow; in fact it is impossible for him to grow without learning, though he may do certain artificial kinds of learning without growing much. His desire to *know* is as keen as his appetite for food, and as insatiable. No more vivid characterization of a child has ever been sketched than in Kipling's charming little verse:

I have six faithful serving men, who taught me all I knew;
Their names are *Why*, and *How*, and *What*, and *Where*, and
When, and *Who*.

* * * *

I know a person small,
Who has a swarm of serving men who get no rest at all,
She sends them abroad on her own affairs
From the moment she opens her eyes;
A hundred *Whats*, a thousand *Wheres*, and seven million *Whys!*

He is simply an embodied interrogation point! Even his oft-deplored tendency to get into mischief is simply due to his overmastering desire to poke his fingers into everything, to investigate the secret springs and causes of their phenomenon, and live up to the rule of the Mongoose Family, which is, "Go and find out!"

He is interested in everything about him with a fine indiscriminateness; things profitable and unprofitable, edifying and unedifying. The one problem of the teacher is to pick out profitable subjects and direct his attention in their direction.

If you keep him well occupied with these he will have little time and less inclination for unprofitable and unedifying researches. Fortunately the things he "Wants to Know" most keenly are usually among the most fundamental and vitally important. No questions, save those of a very wise man, go so unerringly and directly to the heart of a matter as those of a child. Indeed, there is more than ground for suspecting that the old, formal cut-and-dried education was devised quite as much as a defence for the stupidity and peace of mind of the teacher, as for the benefit of the taught.

Teach a child a subject out of a book, hold him strictly to the text and all you need to do is to keep a couple of pages ahead of him. Take him into a shop, a garden, or a laboratory, let him ask questions for himself and demand that your answers shall square with the facts, and he will strain the powers of the wisest and most resourceful. The education which does not develop and exercise the teacher quite as fully and vigorously as the taught, is built on the wrong principle! The school ought to be the last place where a dull or formal mind will find itself at home, instead of a restful haven for mediocrity.

The schoolroom is the natural home of formalism and pedantry, the temple of the "Letter that killeth." It can cover profitably only a part,

and a small part, of the education of the child. All signs point toward the reducing of the schoolroom from its present denomination to a subordinate place in the scheme of teaching, as the next great forward step in education.

Perhaps it might be better expressed rather as a broadening of the conception and expansion of the scope of the school than a degrading, or limiting of the rôle of the schoolroom. As Wesley's parish was the world, so in the new education the entire environment of the child is his schoolroom, and should be utilized in his education. Half a century ago, the educational needs of a community were considered amply met by a room with benches, desks, a blackboard and chalks, slates, pencils and paper, and a few books. What more apparatus could either child or teacher require for giving and getting "an eddication"?

Even for the Higher Education, the required "plant" was almost equally simple. President Garfield's idea of a college — and an admirable one so far as it went — was "a log with President Hopkins on one end of it and a student on the other!" Of course, an educational genius like President Hopkins would have been the last one to make of those "log conferences" anything more than an hour's discussion of work already done, or plans for work to be done. But the idea of required equipment for even a college in those days

was extraordinarily bare and simple. A building with rooms enough to accommodate all the students who would be reciting at one time, a sufficient number of teachers to hear those recitations, and "set" the lessons for the next day or to deliver formal lectures filling so many hours per week, per term. For a library, the textbooks of the students, plus those personally accumulated by the professors, and a few encyclopædias, concordances and other reference works. The campus, simply a stretch of ground large enough to contain the buildings, the whole establishment not costing more than a few tens of thousands of dollars.

But to-day what a difference! The recitation rooms and the teachers' salaries are the smallest items; huge laboratories are demanded where students can do research work for themselves and demonstrate the soundness of laws and principles, instead of merely learning them by rote and accepting them on authority; machine shops and engineering establishments where hand and eye can be trained as well as brain; museums and collections of natural history, of botany, of geology, of electrical and physical apparatus, of manufactures, and of art, where specimens of the most interesting facts and examples of the most important work of the world can be seen and handled; colleges of music, concert halls and pipe organs, where the musical side of our natures can be cultivated.

The library has become a great aggregation of a dozen special libraries and collections, together with large stores of original documents, of copies of important records where the students may quarry out information for themselves, and to assist them in utilizing this huge treasure-house, a librarian and staff of assistants almost as large as the entire faculty of the primitive college.

Then come gymnasia, swimming pools, athletic fields, artificial lakes for rowing — everything, in fact, that will appeal to all the interests and promote the whole development of every power of man. The college has become a miniature world and, in spite of the dreadful dominance of mediæval and scholastic ideals which still persists, the college man is trained and fitted for life as never before!

Something of the same subversive change, though upon simpler, broader and more natural lines, is due — indeed, already under way — in our common schools. The school existing in the midst of a community can utilize that community instead of having to create its own, as the college must. The walls of the schoolroom are already melting into thin air. Classes are becoming flying columns of explorers and investigators; the teachers, peripatetic instead of sedentary philosophers. The whole educational army is being mobilized for manœuvres in the open field, instead of staying in a barracks the year round doing yard drill, reciting

tactics out of a book, and campaigning on the blackboard.

Here is an outline of the tendencies and general drift of the new spirit in education. It is manifesting itself in two ways: making instruction in the schoolroom less formal, and its condition more wholesome and natural; and doing more and more of the work of education outside of the schoolroom. In the first place that diabolical trinity of the old education, the Sacred Three R's, has been cast down from its shrine and reduced to its proper place, as servant and instrument in the mental development of the child, instead of an object of worship and end in itself. It is possible that we may in time get rid of that ancient abomination, the Spelling Class, and McGuffey's "Book of Prayer," as they have already done in Germany. But that will require rationalized and civilized spelling first. The child's mind on entering school is no longer regarded as a blank page upon which anything desired by the teacher may be written, and upon which nothing of importance will be written except what she inscribes. The first business of the modern intelligent primary teacher is to investigate the contents of the child's mind; in other words, to find out exactly what it knows, the clearness of its ideas and its grasp upon their relations to one another. Then it is given some simple, natural object like an apple, or a flower, or the picture of a bird, asked to tell the teacher

and the other children what it knows about it; then the other children add their quota of information. If the items volunteered disagree, they will be encouraged to discuss the question to find out what are the actual facts in the case; then they model the object in clay, or wax, do their best to make a drawing of it upon the board and are given its name and told to write it underneath it, not by letters or words, but as a whole picture.

Children, by the way, can write words just as easily as letters, and far more easily than pot-hooks and such inventions of inspired idiocy. How many of us to-day, who can write a respectable hand would undertake to fill a page with pot-hooks that would pass muster and win us a high mark? In like manner, the qualities or experiences and actions of the bird, flower, or pine cone are added to it, each as a new sacred sign, and in a short time the children are writing without having ever formally learned their letters.

The next demon of the Trinity, Reading, is mastered in an equally simple and straightforward manner. A dozen excellent methods are in use, each one of them the best for the teacher who has devised it or is most skilled in its use. Any of them will reach the result, which is all that is needed! One, for instance, that is in use in the Watt School in Chicago is that of finding for each one of the children some verse or nursery rhyme, or

little song with which he is familiar. Then these are printed from the school press by the pupils of the higher grades, and the child is helped to read his familiar favourite at sight, taking each word as a separate picture with a meaning of its own. Then another verse, which he can recite, is handed to him and he eye-reads this in the same manner. Words really have a great deal more individuality than letters, and it isn't long before he learns to recognize at sight all the commoner words in use in such verses and ballads, and any new words which resemble them he can, in the language of the street, "make a stab at."

As a matter of fact, this is precisely the method which we fully educated and graduated grown-ups use in reading. Any new, or unfamiliar word is at first pronounced as the known word which it looks most like. Hence, the delicious blunders of Mrs. Malaprop and "English as She is Wrote." To stop and spell a new word out, letter by letter is a slow and painful process and one seldom resorted to by even well-educated individuals. We usually either skip it, or call it "that" until we can hear some more erudite person pronounce it properly.

The last demon to be exorcised — 'Rithmetic — is cast out in even more bland and childlike fashion. Five woolly sheep are added to three painted, red cows and the result ascertained. One wee handful of marbles is taken out of a small

bagful and the remainder counted. Three little tots each put two beans into a cup and ascertain the result; or twenty jack-straws are distributed equally among five players. And the children come to recognize these results, to realize that they will always occur and the simple principle on which they occur, without even knowing they are suffering the tortures of addition, subtraction and division, to say nothing of the "vexation" of multiplication, and the insanity of fractions.

The capacity of the human mind for self-humbuggery is something enormous and incredible. Even in the zenith of our powers, we spell not by "Lindley Murray," or "Webster," but according to whether a word "looks right" after we have written it. We write not upon Spencerian principles, but upon the simplest and most rapid method of scratching down some sort of turkey-tracks which intelligent and inspired correspondents will recognize as meant for a word or a sentence. We read by recognizing words as we would the turns in a familiar road, and glimpsing whole sentences as we would go down stairs three steps at a time. Not one in fifty of us can pronounce, or even come within shouting distance of the correct pronunciation of an utterly unfamiliar word. Our actual knowledge of arithmetic and the higher mathematics has shrunk to, and consists of, ability to add up in our heads figures under ten in columns not to

exceed five places in length, to multiply numbers under ten by figures of less than seven, providing that we happen to remember correctly whether seven times nine is sixty-three, or fifty-six, and to divide any melon that comes our way, so that we will get the lion's share of it, and the other fellow the little end.

He is a *rara avis* who can add up a column of figures, say a page of an average bank book, and get an accurate result in less than five trials. And yet we insist upon our luckless infants being grounded and drilled and instructed in all the superb principles and intricate applications of the Great Science of mathematics. All the mathematics that we actually retain, and practically use — unless we are engineers or bank clerks — could be taught to an intelligent boy of fourteen in one year. What is the use of binding upon each rising generation burdens which we no longer dream of bearing, and insisting upon their learning, with great labour and discomfort, a large amount of unnatural and unnecessary material which they will industriously proceed to forget as soon as they leave school? We read by eye, we cipher by rote, we write by "main force and awkwardness" and we spell by guess and God's mercy!

It is high time that this solemn farce and hypocritical humbuggery of holding up standards for the infant mind which we never dream of living

up to ourselves should be abandoned. Of course, we will be told at once that there is altogether too much of this sort of thing going on already, that children are no longer "larned" to spell properly and that the average common-school graduate can neither write a decent letter, add up a column of figures correctly, nor read aloud with intelligence and expression. But this complaint of the shortcomings of the rising generation is one of the oldest stock-in-trade jeremiads of history. It was common talk in the days of the pyramids; it was a "gag" of the Indignant Parent in the Greek dramas, and I have little doubt that it was the shocking spelling, or abominable writing, or both combined, of Shem, Ham and Japheth that drove the venerable Noah to drink! As a matter of fact, most men and women, save those whose necessary occupations, such as business correspondence, or social notes, have driven them to much letter-writing, write poorly and spell worse! To make out that the poor youngster on leaving school is singular or peculiar in this respect, is a rank injustice. Even the "Father of his Country" would never have got more than two places from the bottom in a fifth grade spelling class!

When the child is to be introduced to the Great Wide World about him, initiated into the high and solemn mysteries of "Jografry" and History, then the schoolroom is boldly departed from. Instead

of beginning by introducing the blunt end of the wedge into the infant mind in the form of a mysterious globe or a strangely-shaped picture puzzle with wriggley edges, like nothing else in the heavens above nor on the earth beneath, called the Continent of North America — which is about as intelligible to a child as a sheet of music would be to a puppy — he is set to studying and drawing maps, or plans of the street on which he lives, then the suburb, or ward in which the school is built, his home town and the country that surrounds it, the roads and railroads which run out of it and what they carry away for sale, or bring in for use. He draws plans of his schoolhouse, maps of its grounds and of the house in which he lives, and the farm, or suburb, in which it stands. He gets to understand the meaning of paths, and roads and the things and places which lie at the other end of them. This leads him at once, insatiably curious, out into the valley, or great plain, or range of mountains which surrounds his home; to the wonders of the county seat and the Great City, and the Capital of the state and the broad Fatherland of which all these are a part. Instead of learning to define, with great labour, a peninsula, or other "body of absurdity almost entirely surrounded by words," — a term, by the way, when completely mastered, he will probably have occasion to use about once in fourteen years, after

he leaves the classroom — he is taken to the banks, or sand bars, of the nearest stream and shown those and other text-book phenomena such as Capes, Islands, Bays, Straits, Valleys, Plains and Hills "in the flesh," so that he will want to know what their names are himself and, what is even more important, see at the same glance how they are made and the forces that are at work shaping the face of the world. This leads at once into physical geography, geology, meteorology, to say nothing of nature study of all sorts, botany, zoölogy and agriculture. In fact the only limit to the things and subjects that can be studied from life and at white heat of curiosity in such excursions, is the range of the teacher's knowledge and the limitations of the children's time.

History, instead of an appalling succession of dates and presidents, of kings and queens and famous battles and the "Rise and Fall Off" of empires, becomes a keen, gossipy, first-hand study of the history and experiences of our own town, the date of its founding, the site of its first building, its city hall, its jail, or court-house, details of its growth from the cluster of cabins at the crossroads, the coming of the first railway, the building of its first factory, the erection of its first brick or stone business block. Old buildings are explored, cellars and garrets scoured for relics and mementoes of earlier days; and if a public historical museum is

not in existence, an amateur one is established in the schoolhouse. If the birthplace of some great man, or the place of some notable event of general interest is to be found in the town, a tablet is erected by the children to commemorate it. Long before this study is complete, of course, from half to two thirds of the history of the county has been uncovered; and a considerable share of that of the state, and of the nation as well. And the child is not only ready, but eager, to learn all about the history of these, or at least every part of it which can be brought into direct contact with, or has influence upon, himself and his town; and few other items are worth remembering in any place. If any events or names are so dead that they exist only upon monuments, or in written records, and awake no echo and leave no trace of influence upon the present, then they had better remain forgotten!

One of the obvious advantages of this natural method of education is its elasticity and perfect adaptability to all localities and conditions. The smaller the town, or more rural the school district then the more abundant and easily accessible are the broadest and most vitally important pages in the great book of Nature — the fields, the gardens, the farms, the brooks, and hills. Its only difficulty and expense will be in the matter of occasional trips to county seats, or state capitals for his-

torical, and to adjacent cities, or neighbouring towns for commercial purposes. At the other end of the scale, the larger the community, the more strictly urban the school district, the more abundant will be its free, educational "plant" in the matter of factories, workshops, museums, botanical gardens, expositions and great public buildings, and the presence of large rivers, or bays, or of great transportation, or electric systems. Its heaviest expense and greatest difficulty lies in getting the free, open-air surroundings so vitally necessary for a schoolhouse, and the gardens, sheds and shops in which children can be given practical training of hand and eye together with brain, which they secure without expense in their own homes, the garden and barnyards in smaller towns and in country districts.

Two well-marked tendencies are already at work to balance up, as it were, these inequalities, which give promise already of going far to solve the problem. One of these is already in existence — the large, well-organized, well-equipped, central, coöperative schools situated on the edge of a town or village, to which the children from six or eight surrounding country districts are brought in covered wagons or 'busses every morning and taken back to their homes in the evening. These have been found to be exceedingly satisfactory in practical operation, combining the freedom, fresh air,

good food and direct contact with nature of the country, with that stimulus which comes from contact with a crowd and the longer terms, better methods and more skilful and helpful teaching of the city school with its well paid staff.

At the other end of the scale, the reverse process has already been initiated, particularly in certain German and English municipalities, of carrying the school children of the central and crowded districts of great cities out to the suburbs, or even the open country, to school. By utilizing the suburban trolleys and trains of the morning rush-hour, which, after running into the city filled and crowded with clerks, operatives and business men, are running back almost empty, the expense of transportation can be made comparatively trifling and is more than balanced by the great saving in expense of land for school buildings, playgrounds and gardens.

These schools were originally planned for children in poor health, particularly those who were believed to be likely to develop tuberculosis; and as their principal purpose was to build up the health of the children, their programme was constructed upon this basis and included some two hours' sleep in the open air, and a large share of the time for games, gardening and play. Only enough class work was given to keep the children from forgetting what they had already learned.

But to the surprise of everybody connected with them, these little half-invalids not only held their own, but actually made up grades when they were behind; and on an average made faster progress than their healthy room-mates in the schools down-town.

A similar delightful result has been obtained in the open air schools for the children of tubercular parents, and others predisposed to be tubercular, conducted by the departments of education in Boston and New York City. It is one of the ironies of our boasted system of education that a child must develop tuberculosis before it can obtain healthy and ideal school surroundings. The same method has been applied to healthy children in both private and public schools, with equally gratifying results.

An amusing instance occurred in the town of Chelsea, Mass., after its destructive fire, which swept out of existence two thirds of its school buildings. As a temporary war measure, as fast as buildings could be constructed they were utilized for the instruction of double the ordinary number of children, each squad being given half the usual hours in school, and the remainder of the time in supervised play in public playgrounds and in parks. Before they had succeeded in supplying the number of buildings considered necessary for their school population, vague reports began to come in of the

excellent progress that the children were making on this half-time principle. The wondering school board decided to look into the matter, and on making thorough investigation found that not only the health of the children but the progress in their studies was so much better under the two-hours-a-day-in-the-schoolhouse régime that they decided to continue the experiment further and postpone the building of the extra schools.

One of the most significant and convincing tests of the superiority of the open-air school was that made in one of the public schools of Chicago under the auspices of its broad-minded and progressive school superintendent, Mrs. Ella Flagg Young, on the initiative of its enthusiastic and original principal, Professor Watt. Its results are specially significant because the school is a typical downtown city school on the edge of the stockyards district, attended chiefly by the children of artisans and day labourers, and with a large sprinkling of foreign element, so that the material is neither selected, nor especially promising. As classes are so large that they have to be divided, the two rooms occupied by the first grade children were converted first by the throwing all the windows wide open and keeping them so, except upon the side from which storms come in winter. Then the benches and desks were taken out and the whole floor space of the room turned over to the children, who were supplied with toys, working

material, games, books, and pictures, and encouraged to form themselves, under the guidance of two young and sympathetic teachers in each room, into groups for purposes of play or work. They were allowed to wear their outdoor garments whenever they wished and, as Professor Watt expressed it, "they could change their seats at any time without asking permission, for they didn't have any seats," except little, light, movable chairs and half of them sat on the floor. The instructions of the principal to the teachers, in his own words were: "Keep the youngsters busy, but don't let them learn anything if you can help it!"

Each child was allowed to chose from the well-stored toy and book closets of the room whatever toy, game, working material, book, or pictures he wished; and then shown how to make use of them. A busier pair than those two teachers during school hours could hardly be imagined! The first result was that the children promptly stopped having incessant colds in their heads and snuffles and sore throats, and grew rosy and active and happy. The second that about three months from the beginning of the term, one of the teachers came to the principal and reported that some fifteen children, whom she named, in her room were now ready to be promoted to the second grade. Quick as a flash snapped the reply, with a reassuring twinkle in the eye of the prin-

cipal: "If you tell that to anybody else you'll lose your job. Go right on with the performance."

No child was obliged to enter these open-air rooms if his parents objected, as not a few of them did at first; but before the term was half over, they were coming to the school to beg that their little ones might be taken from the closed-up rooms and put into the windowless ones. Before the Easter vacation was reached, it was decided to apply the method to two other grades; and one of the higher grades having petitioned that their rooms should be turned into open-air ones, a pavilion was constructed upon the roof of the school for their use the sides of which were made up of curtains and movable sash. Now out of eighteen rooms in the building, sixteen are open-air.

When asked how much farther the plan could be profitably carried, the pioneer principal exclaimed: "The next time I can find a school board that will build me a school just as I want it, I'll have them build me a barn, with sheds and a barnyard!"

In fine, no school can be considered complete that does not include a large playground, school garden and group of sheds and shops. The most important and vital part of a school is not its school-house, but its grounds. At first sight the expense of such a plan would appear to be prohibitive, but in reality it is far from being so. It would cost money of course, like everything under the sun that

is worth having, but in small towns and country districts this additional expense would be comparatively slight; while in larger towns and cities quite an appreciable share of the additional money needed for the grounds could be saved on the building. The ideal schoolroom is not a mere architectural triumph, nor an imposing monument to the memory of the schoolboard, solid and massive as an asylum or a prison, but an inexpensively constructed, light, roomy, day-nursery, never exceeding two stories in height, or one room and a corridor in breadth, with broad staircases, wide hallways and at least one third to one half the wall space of each room in the shape of movable window sash, or shutters, so that it can be converted into a porch, or shed, in fine weather. Thoughtful students of the growth of the child are coming to much the same conclusion as experts have come to in regard to sanatoria for tuberculosis, that every dollar spent in constructing a building in excess of about one hundred and fifty dollars per patient is wasted, and worse! From a sanitary point of view, whatever is spent above a certain minimum sum upon a building is spent in overcoming the fact that it is a building, and keeping it light, airy and sunny enough for human use.

The logical result of our ancient habit of making the schoolroom a place to keep children out of mischief, and teach them something to keep their

minds employed, is now to be seen in our schools. It is not too much to say that our present system is literally on trial for its life. On every hand come complaints from merchants and business men that graduates of the schools are useless, unpractical, living in a world of theory; expecting to start with a salary of one hundred dollars a month and actually worth about three a week.

The almost unanimous testimony of practical men is that the pupils have to be taken in hand and entirely reëducated from the bottom up; and the farther they have gone in the course the more radical must this recasting be.

From the family physician comes the complaint that the school terms of the year are the times of headaches, of anemias, of epidemics of infectious diseases, of malnutrition, of nervous irritability, of capricious temper, and of general physical and mental depression.

The hours of the school are so long, the air so bad, the discipline enforced as to prevention of movement and assumption of cramped and unnatural attitudes so absurd and irrational, that it would be hard to discover a child who is in any way improved, physically, by the schoolroom, and almost as difficult to find one who is not injured by it.

From the parent, the public-spirited student of humanity, and the tax-payer combined, comes the

complaint that something like forty to sixty per cent. of all our children leave school between fourteen and sixteen years of age; and that many of them would do so earlier were they not restrained by the pressure of public opinion and the child-labour laws. This is not because they are compelled to earn a living, but chiefly because they have lost all interest and find no profit or nutrition in the highly clerical, anemic and lady-like instruction and mental pabulum which is placed before them after the fourteenth year.

It is not that the child is passing through a period of special restlessness, but that this is the first time when he begins to assert his individuality and to realize how artificial, absurd, and unsatisfactory are the tasks imposed upon him by the schoolroom. The community maintains, at an enormous expense, high schools for the use of all classes of its children. Two thirds of this expense is borne by the less favoured social classes, while nine tenths of the children of these classes and over half of the children of all classes are dropped and shaken and chilled out of the superb curriculum at, or before, the beginning of the high school.

To put it roughly, all the community is taxed to support schools for the benefit of the children of less than one third; which situation comes about almost solely on account of the uselessness, pedantry, and unpracticalness of the subjects taught in

these schools, or of the methods by which they are taught.

Further, from expert students of the school situation has come of late the discovery that in the great cities of our country from fifteen to thirty-five per cent. of the children are retarded — that is to say, from two to four years behind their grades. Which means that nearly one fifth of the total money expended upon our schools is being wasted in teaching this proportion of the children the same thing two or three times over in successive years.

In some of the schools of New York City investigated, so ill-suited, unfitted to the capacity of the children was the instruction that in some of the rooms and grades there were actually children who had been going to school since before other children in that room were born! A more eloquent comment upon the utter lack of fitness, of interest, and of growth value of our curriculum for the average child could hardly be imagined.

What is to be done? In the opinion of the most careful and loving students of the child and of his needs, nothing less is demanded than an absolute recasting of our entire educational system, moulding it to fit the needs of the child, to promote at every point his interests, his growth and his health, instead of antagonizing them two thirds of the time, as it does now; to make his education fit in both with his previous life and development

before he enters school and with the world and life in which he is to live, after he leaves school. We take a young child now, and break him in to the schoolroom, training him to breathe an entirely new and artificial atmosphere, as if we were to turn a frog into a fish. Then, after preserving him with great care and pains in this gold-fish bowl for ten years, we throw him gasping out on to the bank to learn to breathe air again and completely recast his scheme and ideas of life, in order to fit himself for the world in which he finds himself.

If we deliberately took pains to unfit a child for real life, we could hardly improve upon our present school system. For investigation we substitute memory; for initiative, tame obedience to authority; for self-activity, parrot-like imitation; for doing, talking; and for things, words. Then we wonder why he is not practical and properly fitted for the battle of life!

The main aim of our system of education is *superiority* instead of *service*. It tends to make a select, superior, cultured class, who shall be more or less borne upon the backs and shoulders of the uncultured mass of the people; to breed prigs and parasites instead of men and women.

The training appropriate for those two purely ornamental and, on the whole expensive and undesirable parasites, the Gentleman and the Scholar, still dominates too much of our school curriculum. The ideally

educated man still is to be *in* the world, but not *of* it — a chosen stratum, a special priesthood of culture and superiority.

How are we going to square our education with the facts of life, and prepare the child for this world instead of the next?

CHAPTER X

EYES AND EARS

ONE of the most singular characteristics of humanity is its dread of the new and the untried. We boast ourselves a progressive race, and yet we are always looking backward, with longing, and even regret. We have survived and triumphed gloriously in the past, but — heaven only knows what we are coming to in the future! The old days were the good days, and the long days. The present are the short, and the evil. Especially are we afraid of the conditions which we have created ourselves, and which we call civilization. Savagery was full of primitive vigour and of childhood's joy in existence for its own sake. Barbarism throbbed with the hot pulses of love and the lust of battle, while civilization is the "lean and slippered pantaloon" of later middle life, sure to blunt the senses and to chill the pulses. Forgetting among a thousand other facts, that the favourite occupation of civilization which we call colonization has been the sending forth of our least successful, headed by our most restless and ill-balanced, to beat the Savage and the Bar-

barian at his own game, and wipe him off the face of the earth.

Nowhere is our dread of civilized conditions more vividly exemplified than in our apprehension as to their effects upon those wonderfully delicate and exquisite mechanisms, our special senses, and particularly those of sight and hearing. No commoner plaint is heard upon every hand than that we are becoming a race of spectacle wearers, that our children are born short-sighted, and that our sight and hearing are breaking down under the terrific strains of civilized life.

We seem to have good reason and evidence for this pessimistic belief. On every hand, grave and reverend seniors assure us that nobody ever dreamed of wearing "specs" before they were gray-headed in their time, and now we put them upon babies as soon as they can toddle. Fifty years ago, such a thing as "eye-strain" was never heard of. Now it is one of the most fashionable complaints, a mark of intellectuality and culture. Examination of the eyes of our school-children reveals the horrifying fact that from fifteen per cent. to twenty-five per cent. of them present defects which need glasses for their correction. And in Germany, at least, this percentage increases from the lower through the higher grades. Even those who escape the grosser defects can nearly always discover, if they examine closely enough, that they have some trace of astig-

matism and are thus qualified for brevet-rank in our modern aristocracy of defectives.

Moreover, from every printing office and pressroom are pouring forth floods of newspapers, illustrated magazines, books and pamphlets which we must master, or at least glance over, or fall behind the procession, and thus complete the ruin of our already weakened and overstrained optics. In addition, we have floods of corroborative evidence as to the decadence of all our other senses and powers. We have practically lost our sense of smell as compared with the savage who can track the fox unaided in the dewy morning. Our teeth are decaying before they have got fairly set in our heads. Our ears have become dulled and stunned by the roar and the clamour of our workshops and our city streets. Our heads are coming through our hair before we have got fairly settled in life, and altogether, our boasted cephalic extremity is a deplorable spectacle of decay.

All of which literally baffling presentment, however, is based upon one common foundation, and that is the one so frankly given by the great Doctor Johnson for one of his few mistakes in definition in his famous dictionary. When asked, with a polite simper, by a lady of literary pretensions:

"What, Doctor, led you to define *versatility* in such a way?"

"Ignorance, ma'am, pure gnorance!" thundered the doctor.

Our certainty that modern eyes, ears, teeth, etc., are decadent, is in direct ratio to our picturesque and profound ignorance of their exact condition in the savage. The noble savage is a myth. Instead of being a model of physical perfection, he was undersized, narrow-chested, short-lived, and with a perfectly enormous mortality. The average savage tribe in the open has a death rate of from one and a half times to double that of our slum populations. There is no disease or defect known to civilization to which he is not subject, except certain of the infectious diseases. And when these latter reach him, they mow him down like grass before the scythe. Competent dentists who have examined collections of savage crania, discover every form of decay of the teeth and of disease of the gums which are known under civilization, and in almost the same proportion. The keenness of his sight, his smell and his hearing are simply the result of incessant and inescapable training, living in the constant atmosphere of danger and of suspicion. If he did not keep his senses strained to the utmost and stretched for the faintest intimation of danger, he could never have survived. We have let some of our senses lapse somewhat under the slothful security of civilization, particularly that of smell, which might properly be described as one of the lost

arts. But we can reacquire them, not merely in a generation, but in half of a single lifetime, as hundreds of white trappers, drovers and hunters have abundantly proved.

Now as to his eyesight and hearing. Here the proposition is somewhat less definite, for the vivid and striking reason that the savage boy or girl never had to learn to read, since they had no books. If our modern boys and girls were allowed to grow up as did the savages, reading only the book of nature, we should hear very little of eyestrain. Even if defects were present, they would never be discovered. The savage uses his eyes at least three fourths of the time at long range, and for large or moving objects — the flight of birds through the tree-tops, the trout at the bottom of the pool, the deer in the brush, the band of horsemen sweeping across the prairie. Even when he becomes a student of art, his pictures are drawn with a charred stick or a chunk of yellow ochre; and such writings as he possessed are pictographs which can be read at fifty feet from horseback. The only close work to be done is in such odds and ends of time as he spends in shaping and polishing his weapons, or in tattooing himself or his comrades. Of course the savage woman has her fancy work. She wouldn't be feminine if she didn't. But her needles are the size of a brad-awl, and her threads like whipcord, so that the resulting pat-

terns can be readily worked on at the full length of the arm.

Civilized man, on the other hand, uses his eyes for the deciphering of tiny little letters, strung in straight lines like buds on a stalk — for a total of hours every day of his life, and often eight hours at a stretch. No wonder that the eye which the savage found perfect for his purposes is discovered to be inadequate for modern use.

In short, practically the only basis that we have for our oft repeated and firm conviction that the civilized eye is inferior to the savage is the fact that the savage, or inherited, eye will not do civilized work without assistance. When that assistance is given the eye becomes, with intelligent use, adequate to its new task. And we have no valid proof that the civilized eye has become any weaker or less adequate during the past hundred years. Moreover, we now have a number of indications tending to show that the savage eye is defective in the same way, if not to the same degree, that the civilized one is. First of all, that from fifty to seventy per cent. of all children of whatever grade in society or nationality examined, shortly after birth, are found to be born slightly long-sighted, which is far the commonest defect for which glasses are worn. So that all that the strains of later life do is to reveal this already congenital defect. Second, that such examinations as have been made

of Indian and Negro children show about the same percentage of long-sightedness, though less of the opposite defect, short sight. Third that examinations of the eyes of thousands of school children in all countries show as high a grade of long sight among the children of ignorant and illiterate peasants and artisans as among those of the most intelligent and cultured classes who have been readers for five or six generations, and a much higher degree of defects due to diseases of the eye. Fourth, that all races of whom we have any knowledge see the stars as star-shaped, cross-like, or radiating bodies. This star, or rayed shape, is due to astigmatism. If our eyes were perfectly free from this defect, the stars would appear to us as tiny, perfectly round points of light, like miniature suns or moons. No race, however nobly savage, has ever considered "star-shaped" the equivalent of round.

Still every reader of his Cooper knows that a savage has "eyes like a hawk"; while every town dweller is by comparison "blind as a bat." But careful experiments and repeated practical tests have shown that this difference is not in keenness of vision, but in skill in interpreting what is seen. The city man sees, for instance, precisely the same brown and yellow blurs upon a brown, yellow and purple background that the savage does, and just as vividly. Only he doesn't know that which means deer, which the savage, by daily and hourly

incessant training from childhood, has learned to recognize.

The hawk, it may be remarked in passing, is a much overrated bird in this, as in several other respects. And his most affectionate students are now of the opinion that he doesn't see any farther, sharper, or better than we do, but owes his undoubted quickness in detecting game or an enemy to the altitude of his position, his unobstructed view, and to the fact that his two eyes work separately, and don't bother to try to get together in binocular vision. So that he covers the whole face of the horizon except a small arc directly behind the back of his head. Only keep perfectly still, and match your surroundings sufficiently closely not actually to swear at them, and the hawk will sweep and flutter over you less than thirty yards in the air, without ever detecting your presence.

The human eye is as good a piece of optical apparatus as anything that walks or swims or flies, and infinitely more dependable than most. The average farm-bred white man can in a few years' practice in the open learn to see the partridge among the dead leaves, the quail in the stubble and the deer on the hillside, just as quickly and as instinctively as the Indian, though every sound, every rustle, every shift of the light, change of colour, or puff of air speaks directly to the Indian, without his having to stop and reason about it in

a way that it takes decades for a white man to grow into.

We may therefore, face the problem calmly, secure in the thought that we have no adequate evidence that any process of decadence has as yet set in, or that the human eye has as yet been seriously harmed or shown any sign of giving way under the strain of civilization.

The dangers to which the modern eye is exposed, fall into two great classes; disease and overuse from near work. Here another great consoling fact faces us, and that is that, while overwork and consequent eyestrain are far the commonest troubles that befall the modern eye, discomfort and inefficiency are as far as they are able to go in ninety-nine cases out of one hundred. *Never yet was an eye lost solely from eyestrain.* Practically all blindness is due to disease, and not to overwork. More significant yet, seven tenths of the diseases which produce blindness are the acute infections, small-pox, granular ophthalmia, or *trachoma*, gonorrhœa and syphilis. Against these civilization wages an unceasing and victorious conflict. Small-pox it has practically overcome, thanks to vaccination. Trachoma is rapidly disappearing, except from our slums, and our most ignorant and degraded peasant populations. Gonorrhœa and syphillis alone hold their own as "blinders," on account of our highly intelligent amblyopia in declining to recognize them

officially or mention them in public. Just so long as we continue to consider it immodest and improper to discuss these last two blights, so long they will continue to put out the eyes of little children by the thousand. The danger, then, of total blindness, is less under civilization than ever before. One hundred years ago, from forty to sixty per cent. of those who were in the blind asylums were there on account of small-pox. Now vaccination has reduced their percentage to less than two per cent.

The percentage of blindness from trachoma has enormously diminished, while to-day, the lion's share of the population of our blind asylums belongs to gonorrhœa, with syphilis a fair second. In the different asylums in this country and in Europe, from fifteen to forty per cent. of the inmates are put there by gonorrhœa; yet we do nothing publicly to stop it, because it isn't "modest!" No known disease which causes blindness is increasing under civilization. So that when we do finally come to our senses and fight all diseases alike, as we surely will, we have good right confidently to expect that blindness will be practically abolished, or reduced to less than five per cent. of its present frequency.

Even the risk of blindness from accidental causes, such as wounds, blows, scaldings, and burnings is very much less than it was before, and still diminishing, on account of the enormously increased power of curing wounds of the eye placed in our hands by

antisepsis and asepsis. Where ten eyes were lost by wounds becoming infected, less than one eye is now lost.

Only one form of blindness can be fairly said to be becoming more common, and that is cataract. While this is becoming more common, because a larger percentage of people are living to the age when it naturally occurs, yet the actual blindness caused by it has been almost wiped out by the delicacy and perfection of the operation which has been devised for its cure. Nine tenths of all cases of cataract can be given good working vision for both reading and distance, by removing the opaque lens and replacing it by lenses of glass, properly adjusted and worn as spectacles, in front of the eye, instead of inside it.

I almost hesitate to apply the term "disease" to this curious process, which is really a form of maturation or ripening, and has, in its ordinary form, nothing to do with disease, or conditions of the health. It is a singular and most interesting process. To put it very crudely, a little ball of cells has formed itself in the centre of eye, for the purpose of acting as a lens or focuser of the light rays. In order to do this perfectly, it had to become absolutely transparent. And as blood vessels, of even the most hair-like delicacy are opaque, it, so to speak, surrendered its birthright in this regard and became entirely dependent upon the absorption of fluids from the

surrounding tissues of the eye — the iris, choroid and vitreous body. Unfortunately, however, under these conditions its only method of growth possible is from without, by additions to its surface, just like a tree trunk, or a plant stem. And after a time this process of steady deposit of new material upon the outer surface reaches a point where it completely cuts off from an adequate supply of nutriment the cells in the centre of the mass. These slowly die at a period anywhere from the fifty-fifth to the seventieth year, undergo fatty degeneration, and become opaque, and behold cataract is formed.

This little body that we have been describing, the crystalline lens of the eye, is in fact a plant-like organism in an animal body, and like the plant it ultimately reaches a point at which it begins to decay at the heart.

The operation for cataract is simplicity itself, merely an incision with a very delicate knife, under strictest aseptic precautions, through the coats of the eyeball. A little cutting with a sharp hook or delicate pair of scissors, to liberate the lens from the iris and its capsule, gentle pressure upon the ball of the eye, and, pop! up comes the opaque and useless lens, leaving the eyeball perfectly transparent once more. All that remains to be done is to put a lens of similar strength in the frame of a pair of spectacles, and hang it before the eye, to take the place of the lens removed.

With all our ingenuity however, we can only imitate Nature at a distance, as it were. And as this new lens is glass, and cannot adjust itself, or, as the term is, *accommodate* "for near vision," we have to have a second stronger glass to read with, and sometimes a third for very close work. With these lenses however, the man who has had his cataract successfully removed, can count upon anywhere from half to three quarters of full vision, which is abundant for all practical purposes.

This brings us to the fact that a large share of our troubles with our eyes in modern times is due, like cataract, to the fact that we have got into the inveterate habit of outliving them, as well as our teeth, our hair and our hearing, and of this we obstinately refuse to break ourselves. Nature doesn't borrow any trouble before she comes to it. And as the average savage lived only about thirty years, Nature built his eye to last forty to forty-five, giving him a liberal margin of fifty per cent. Then we blame her, because this eye that was loaded to carry for forty-five years, will not go passively on and do all that is required of it till sixty, seventy or even seventy-five years of age.

When we are willing to reform our bad habit of living too long, to abandon our "bloodthirsty clinging to life," as Matthew Arnold called it, we shall find less reason to complain of our eyes and ears.

Now, as to that hydra-headed monster, eyestrain,

the dragon which is apt to devour the eyesight of the civilized races. This is almost entirely dependent upon a series of oversights on the part of Mother Nature in not making all our eyes just the proper shape. She is still unfortunately "trying her 'prentice hand on man," and the lassies as well. The sole purpose of the shape and clear parts of the human eye cornea, lens and vitreous body—is to act as a lens which will bring rays to a focus on the retina at the back of the eye. As all light-rays coming from objects more than twenty feet away are practically parallel, and these constitute nine tenths of a savage's range of vision, the eye is made with a lens of such shape and thickness that it will, when at rest, bring parallel rays to a focus upon the retina, without effort. This is what has been termed the *emmetropic*, or normal eye. But unfortunately, this normal eye, like a good many other normal things, is only a figure of speech. And from fifty to sixty per cent of us are born with eyes which will not bring parallel rays to a focus without the assistance of a little muscular effort. In other words, the average eye is what we term *hypermetropic*, or long-sighted.

Here comes in however, the really masterly piece of mechanism in the human eye, which atones for all the purely optical defects of that organ, and makes it one of the most wonderful "scopes" in the world, ranging all the way from the distant range of the

telescope to the minute accuracy of a weak microscope, and that is the so called "power of accomodation." The precise mechanism is too elaborate for description without a detailed knowledge of the anatomy of the eye. But the principle is simplicity itself, viz., that by the contraction of a small circular muscle, the so-called *ciliary* muscle — the crystalline lens, the body involved in cataract, is made to become more bulging from before backward, and hence increases the converging power of the eye, so that even rays which are not parallel, but divergent, can be brought to a focus upon the retina.

Even this power of course has its limits, as you can readily test for yourself, by focusing upon the tip of your finger at full arm's length for instance, and rapidly approaching it toward the face, when it will be found to become blurred at a certain point whose distance from the eye will vary according to your age and the power of your ciliary muscle. In childhood this "near point," may be as close as four or five inches; but by middle life, it will usually have receded to about twelve or fourteen.

Now, supposing that you are born, as most of us are, with an eye that requires a slight muscular effort in order to focus parallel or distant rays upon the retina. It is of course, obvious that when we have habitually used that eye for hours at a stretch and seven days in the week upon objects from one to three feet distant, the rays from which are markedly

divergent, that this muscle is going to become overtired. When this is the case, what is to be done?

If the defect of the eye be only slight in degree, as fortunately it is in the majority of cases, it will be sufficient to moderate the amount of near work to within reasonable limits, to take the best and most intelligent precautions as to the amount and the direction of the light by which the work is done, to give the eye plenty of work for distant purposes, in order to arouse it and restore its tone, and to keep both eye and system in good physical condition. When, however, this defect of the eye goes beyond a certain degree, these measures are inefficient; and as it consists solely in a slight flattening of the eye, we have at our disposal a mechanical remedy, in the shape of a lens or glass, whose bulge, or thickness in the centre, is equivalent to the degree of flattening of the eye. When we put a lens in front of the eye for the correction of long sight, the defect that calls for certainly half to two thirds of all the spectacles that are worn, we are simply correcting an oversight on nature's part, and giving the eye a new power. We are not doing the eye the slightest damage. On the contrary, we are saving it from a painful and crippling strain, which will last the whole lifetime of the individual. Instead of the eye becoming old sooner from wearing glasses, it will retain its youth for a much longer period than it would without them.

This is the gist of the wearing of glasses for long sight, as it applies to the child or the youth. Later in life, another form of it develops, which requires appropriate correction. That is the well-known "failing sight" for reading or writing purposes, of middle and elderly life, technically known as *presbyopia*, "elderly sight." This painfully familiar phenomenon is due to the fact that while the crystalline lens is growing all through life, after the manner described in discussing cataract, it is growing in thickness more rapidly at the circumference than at the centre, and hence is becoming flatter and of lower refractive power. So that after a time the eye will no longer bring parallel rays to a focus on the retina. What is, however, more effective in producing this "old sight" is that as it grows both larger and older, it loses elasticity, and is no longer able to change its shape so as to "accommodate" the eye for near vision. Here again, the same condition confronts us as in congenital *hypermetropia*, and we simply place a lens in front of the eye, whose bulge corresponds to the degree of flattening of the lens. This flattening and loss of elasticity has usually progressed in most eyes at such a rate that by somewhere about the fortieth year, or shortly after, it becomes necessary to correct it by means of a lens. As it is however progressing, it will be necessary to supply a somewhat stronger lens on an average of about every five years until after the

sixty-fifth year, after which the change either ceases, or is much slower.

Instead of the eye — either in youth or in old age — being made any weaker by these glasses, it is made stronger and more efficient, and younger in every way. The failing sight of old age has been almost abolished by the combined aid of glasses and the operation for cataract, and there is no necessity whatever that those who look out of the window should be darkened as long as life lasts. Glasses in fact have done more to reduce the pains and penalties of old age and to prolong the comfort and efficiency of life than any other single mechanical factor invented. So long as a man can see well, and read his newspapers and his favourite books, there is no reason for his losing interest and enjoyment in life.

When we add the good digestion that comes from properly made artificial teeth, and the abolition of deafness by intelligent care of the nose and throat, it is not too much to say that civilization has almost abolished the more serious penalties of old age.

Now, as to the opposite defect of the eye, known as short sight, or *myopia*, due again to nature's oversight. This is due to the eye having overgrown, so to speak, so that it is too large and bulges too much, just as the long-sighted or hypermetropic eye is flattened too much. It has been proposed, simply

as a convenient figure of speech, to call one of these the "onion-shaped" or flat eye, and the other the "orange-shaped" or bulging eye.

Naturally, this produces just the opposite effect upon the light rays, viz., that parallel rays of light entering the eye are brought to a focus in front of the retina instead of behind it, as in long sight. Equally obviously, as every effort of the ciliary muscle increases the bulge of the eye, muscular activity can do nothing to cure this defect. In fact, it simply aggravates it. However, just as soon as objects are brought within five of six feet or nearer so that the rays from them become divergent, then these rays are brought to a focus upon the retina without effort. So that the possessor of the myopic eye can read and write almost perfectly, and with very little effort. Objects can be approached to the eye until they even touch the tip of the nose without becoming blurred in their outlines, so that is often the impression of the myope that he has an unusually strong eye, though for distant vision, he is of course, as his name implies, short-sighted. The cure of this defect is as simple as that of *hyperopia*, viz., to put a concave, or —, lens in front of the eye, which will neutralize its bulge, and will cause parallel rays to be brought to a focus upon the retina. Obviously these glasses must be worn constantly, except that occasionally they may be removed for near work. This form of defect of the eye can be

made worse by excessive use of the eyes for near work, and especially in bad light, or under unfavourable hygienic surroundings. While fortunately less than a third as common as long sight, it is far more dangerous. Both because it increases the risks of accident and because when eyes are overstrained in poorly lighted rooms, and especially in underfed children who live in unsanitary surroundings, this defect increases with the use of the eye, and with the growth of the child. In the higher grades of certain German schools, for instance, it reaches the appalling prevalence of thirty-five per cent. to forty-five per cent. of the class, though in the lower grades it is not more than fifteen per cent.

There is still another type of defective shape of the eye, which is quite common, though less so than either long sight or short sight, and that is *astigmatism.* This consists in a complicated condition or shape of the eye, caused by its bulging, or being flattened — as the case may be — more in the vertical plane than in the horizontal, thus giving a skew shape to the eye. This, though less blinding, is an exceedingly annoying and irritating defect, and gives rise not only to difficulty and trouble in using the eyes, but also to many disturbances of the nervous system, which are not at first recognized as due to eyestrain, such as headache, nervous dyspepsia and neuralgic attacks. It can also be corrected by placing glasses of a peculiar shape,

known as "cylinders," before the eye. Whatever the form of the defect, it is of the utmost importance that this should be recognized and properly fitting glasses adjusted by a competent oculist, and worn.

All progressive departments of education are now insisting upon a periodic examination of the eyes of all school children, and the correcting of such defects as may be found. It is little better than a waste of time and money to endeavour to teach children who are suffering from uncorrected long sight, short sight, or astigmatism, for not only are they unable to see properly, and their poor little eyes become easily fatigued and confused, but they are liable to headache, loss of appetite, restless sleep, and a whole group of nervous symptoms which will persist in spite of all sorts of treatment until their cause is discovered. The popular impression that glasses in some way weaken the eye, or aggravate the defects which they are intended to cure, is entirely baseless, unless they have been fitted by incompetent persons. And the terrible penalty that you "become dependent upon them," is merely an expression of the good judgment of your eye, when once it has been given full and perfect vision, in declining to be satisfied with anything else.

One touch of silver lining in the cloud of the myope should be mentioned and that is that this flattening and hardening process which comes on with age and makes the long-sighted individual

more long-sighted has the fortunate effect of steadily lessening his defect. So that about the time that his long-sighted comrades begin to put their glasses on for age, he can begin to weaken his, and ultimately may be able to dispense with them altogether. This is the explanation of those instances of how much stronger and healthier the eyes were a generation or two ago, based on the statement that Grandfather So-and-So was able to read his Bible without specs at the age of seventy-five. The good man had probably been a myope of moderate degree all his life without discovering it, and owed his ability to do without spectacles in old age merely to the abnormal shape of his eye, and not to the preservation of his youthful vigour.

Like eyesight, the only difference between the hearing of the savage and of the civilized man lies in the extent and direction in which they have been trained. Deafness is quite common among savages, though less so than in civilized races for the grim reason that the savage who cannot hear the approach of the panther or the tiger, or the stealthy footfall of the scalp-hunter from a hostile tribe, is not likely to attain a ripe old age. There is nothing in the conditions of civilization which tends to throw any more severe strain upon the ear or hearing. The popular impression that the din and clatter and jangle of modern city life, of machinery, of locomotives, of boiler factories, of steam whistles, has an injurious

effect upon the nerves of hearing, is without foundation. Such effects as may be produced by these abominable and cacophonous noises, is due entirely to their secondary effect upon the nervous system, particularly through causing loss of sleep, or rest.

As in the case of vision, the real enemy of hearing, the principal cause of acquired deafness, is disease, and particularly the infectious diseases. Complete or absolute deafness is usually due to disease or defect of the auditory nerve, or nerve of hearing. The defect is usually congenital and about one third of deaf mutes are born deaf. The majority of them however are made deaf by the attack on the auditory nerve of some disease in infancy or early childhood, most commonly meningitis, particularly the cerebro-spinal, or epidemic variety.

Neither of these distressing conditions is fortunately very common, not more than one or two children in a thousand being affected. It is perhaps hardly necessary to say in passing that children who are born deaf, or become so within the first four or five years of life, are usually dumb. Their loss of speech has usually nothing whatever to do with the vocal organs, which are usually in perfect condition; but, being entirely unable to hear the sounds which they themselves make, they cannot control them so as to form articulate speech, nor can they hear and imitate the sounds made by others. They can, however, scream or cry out, groan, etc., often very

loudly, but with absolutely no meaning or inflection in the sounds. By an ingenious system of instruction, substituting the position of the lips and the sensation of the muscles of the throat for the sense of hearing, they can be taught to speak quite clearly and fairly, though in a mechanical, colourless, phonographic voice.

Nine tenths, however, of the defects of hearing, are partial, and these are almost invariably due to inflammations beginning in and extending from the throat up through the eustachian tubes to the drum-cavity and do not originate in the ears at all. Scarlet fever is the most frequent factor, and will sometimes almost completely destroy the hearing. Diphtheria also may produce deafness in this way, as also may tuberculosis. But the commonest cause of deafness is ordinary catarrhal inflammation of the nose and throat, neglected until it extends to or blocks up the eustachian tubes. In the earlier years of life, this inflammation is set up most frequently by adenoids, in later life, by a variety of chronic catarrhal processes. Take care of the throat, and the ears will take care of themselves in ninety-five cases out of a hundred. The only way to cure disease of the ear is to treat it while it is still in the throat.

CHAPTER XI

THE WORSHIP OF THE RACE STREAM

MAN has tried his hand at worshipping almost everything in the universe that he can think of — including himself. His worship was a desperate attempt to anchor himself to something that would endure, to range himself in the scheme of things. He has worshipped the wind and the lightning, the sun, moon, and stars, the earth and the sea, his ancestors and the phantoms of his dreams: always something behind him, ever something in the past.

The time has come for a worship of the future. Why not worship our posterity instead of our ancestry, our children instead of our grandparents. Such a religion would have the marked practical advantage of doing good to the object worshipped, as well as to ourselves. As the main object of religion has ever been to ingratiate ourselves with the Powers That Be, here is a chance to consolidate ourselves with the powers that are to come, instead of with the "Have Beens."

To worship our children would give the best possible guarantee that they will worship our memory,

which is what we desire above all things. Our deepest dread is of being forgotten; that is the only perdition which we fear. In the race we have been alive since the beginning of time, and in the race and its memories of us, we shall endure until all eternity. If we long for immortality, here it is. If we yearn for something enduring, ever conquering, something by the side of whose antiquity the pyramids and the Sphinx are but as mushrooms, behold it!

We used to regard life as something fleeting, perishable, to be destroyed by a breath, evanescent as a melting snowflake. Now we know it to be a thing almost infinitely hard, enduring, resistant to every change, and to every onslaught, forcing its way over every sort of opposition, adapting itself to every shift of circumstance and change of scenes, but remaining itself unchanged.

No snow-capped mountain chain, no sculptured obelisk, no shape of a continent has changed as little as man has in the last fifty thousand years. The individual dies, but the race remains, unchanged, save by improvement and, barring some cosmic catastrophe will continue so to survive indefinitely.

> And fear not lest Existence closing your
> Account and Mine shall know the like no more
> The Eternal Saki from that bowl has poured
> Millions of bubbles like us, and shall pour.

The race has made us what we are. In the race is all our hope of the future. What can be a higher and more sacred duty than to preserve the purity of its stream, and hand on its inheritance undiminished, its torch of life undimmed, to the next generation. Of some such character will be the religion of the future.

The study of the continuance of the race, its mechanisms and the dangers and perils to which it is exposed is as fascinating as it is vital and important. We can best, and indeed only, study ourselves in our ancestry, and the most important use we can make of this knowledge is to benefit our offspring. It is a good thing to "Know Thyself," but much better to know thy children, for they are young and plastic, and not past mending. It is often difficult to get properly acquainted with yourself until it is too late for the knowledge to do you much good. We cannot exercise much choice in the selection of our parents, but we can in those of our children.

The methods by which the torch of life is handed down from one generation to the next are of a singular simplicity and beauty, although in some of their more elaborate forms at first sight, apparently complex. The fundamental process is exactly the same in all the myriad forms of life, from the ameba to man, namely, the division of one cell into two halves. In the simplest forms the one-roomed house of life, where the body con-

sists of but a single cell, the organism never dies, but simply grows as big as it can, and then cuts itself in two, making two cells, where but one was before. The creature divides itself into two equal parts, both of which "live happy ever after." It is in fact immortal.

Only when the body has reached the complexity of a colony of cells with division of labour among them, does death appear on the scene. Then a single cell, or small group of cells, is budded off from the side of the old and decaying body to start a new life of its own. Thus as has been picturesquely expressed, "Death is the price paid for a body." By either of these methods, splitting or budding a single animal, consisting of a cell or small group of cells, can go on reproducing itself indefinitely; but by the time the process has reached fifty or a hundred generations, its energy begins to slacken, and its power of drinking in the life-giving sun-current from its surroundings begins to wane. It gets stale and jaded and feeble, and unless new life can be added from some source, it will die out and disappear. If, however, one of these cells should happen to meet a foreign, or unrelated cell, and by a curious reversal of the multiplication process the two unite and fuse together to become one cell, then the process of reproduction starts up again with primitive vigour, and continues luxuriantly for another one hundred generations.

This is the birth of sex, and the higher and the more complicated the organism becomes the greater and more absolutely vital becomes the necessity of conjugation, or the combining of one cell with another in order to produce a third.

The next step is the budding off of a few germ cells on purpose to form a new organism and these are of two sorts: cells of the male type, and cells of the female type. Both of these are at first produced by the same organism, and each is incapable of reproducing on its own account, but must combine with its counterpart of the opposite sex in order to become fertile. In spite of this division of labour however, the female cell still retains traces of its pristine power of unaided reproduction on its own account. This was brilliantly shown a few years ago in the experiments of Loeb, who, by adjusting the temperature and salt percentage of sea water, succeeded in making the unfertilized eggs of both the sea-urchin and star-fish begin to develop into larvæ, and reach the first stage of reproductive growth.

In the earliest forms of race-continuing experiments, when she was "trying her 'prentice hand," as it were, Nature simply did the easiest thing first and arranged for the production of both male and female germ cells by the same individual, so that originally all animals were bi-sexual. This may seem like a very far cry from the twentieth

century, but so long and obstinately did Nature muddle along with this clumsy method of rejuvenating the race stream at each generation, that it became stamped deeply into the very fibre of our beings, and even to-day the most highly specialized animals carry in their bodies the germs and partially developed rudiments of all the structures belonging to both sexes. If one set of these rudiments develops to full completion, the individual becomes of one sex; if those of the other sex so develop, of the opposite. But so alive and full of possibilities are both these sets of rudiments that if by any chance or accident the germ glands of an individual become impaired or diseased, then both sets of rudiments begin to develop together, producing often strange and fantastic hybrids between the two genders. Some of these unused rudiments — which of course have nothing to do and like all idle members of the community are apt to get into mischief — play quite an important rôle in pathology and become the site of troublesome and even serious disturbances.

But, after a few million years of experience with this method of reviving the race stream, it was found, by some lucky accident, that if the germ cell produced by one individual happened to combine with a germ cell produced by another individual, instead of with one of its brothers or sisters, the result was a much more vigorous and enterprising new generation.

Animals born of such "foreign" unions, inheriting the best of both parental streams and stimulated to new life by the admixture of different strains were so much sturdier and more enterprising than the offspring of the old "marriage within the family" matings, that they gradually exterminated them upon their own levels, or climbed above them to higher ones. So that for many millions of years past only those unambitious and indolent creatures which were content to remain at the bottom, or on the two or three lower steps of the Jacob's ladder of animal life, such as the sea anemones, the starfish, the molluscs, shellfish and the worms, have retained the old clumsy and primitive method of producing germ cells of both sexes in the same individual. And even the most enterprising and progressive class of these, the worms, the only ones who really "get anywhere," in the sense of becoming the ancestors of higher forms of life, including ourselves — for we are literally "worms of the dust" in an even deeper and more fundamental sense than that intended by the Psalmist — although they still keep up the production of both kinds of germ cells, take care that the gonads produced by one individual are quickened, not by their brother or sister cells, but by the gonads of another individual.

This interesting intermediate state of affairs is most familiar to us and was first discovered in flowering

plants, most of which possess, as is well known, both male gonads, or anthers with their pollen, and female gonads or pistils with their ovules, but which take, so to speak, the greatest pains by means of brilliantly coloured blossoms, powerful perfumes, honey and other sweets, to ensure the fertilization of their pistils by pollen from some other flower, carried upon the wings and legs of some honey-loving insect.

Flowers are splendid advertisers and literally "spread themselves" to attract their insect-customers: they are in fact the earliest prototypes of the much maligned yellow journalism, red type, pink paper, huge headlines and all, for they flaunt their notices of bargain sales, "positively for this day only," in all the colours of the rainbow — crimson and silver and purple and blue and gold. If, to blow one's own horn, in all the loudest tones of the "chromatic" scale be immodest, then flowers "in the days of innocence" were the first offenders, not man "in the days of villainy," as Falstaff pathetically pleads. As they have no circulation, in fact are billboard posters and wallpapers rather than newspapers, and their life is of the shortest, they are obliged to exert to the utmost every art of display and of attraction; and to this we owe that superb and gorgeous pageantry of glowing colour, of exquisite form, of delicious perfume which fills the meadows and woodlands every spring.

It is an interesting illustration of the essential and inherent beauty and charm and purity of sex that to it and its influences alone we owe all the beauty of flowers, the vivid and brilliant plumage of birds, the rapturous melody of their songs, the velvety splendour of the coats of animals, the beauty of their forms, the poetry of their motion and the majesty of their bearing. The painted splendours of the butterfly's wing, the meteor-glow of the firefly, the exquisite beauty and delicate charm of woman spring from the same source. In fact little that we know and delight in of colour and outline, of musical tone, the whole arts of painting, of sculpture, of music, of architecture, of dress and the drama, and the best part of religion would ever have come into existence without it. A fair half of all that makes life delightful and ennobling and wholesome springs from this noble source.

If any instinct that stirs the breast of man can claim to be elevating and holy, it is the one which concerns itself with the life and the continuance of the race. It is the first impulse which lifts man outside of himself, the very basis of all altruism and devotion and the mother of all the gentler virtues, love, affection and kindliness. Yet the ascetics of all ages, being themselves ugly and cowardly and filthy, have hated the race-instinct because it was beautiful and brave and clean. As they

were unfortunately our first teachers and writers they have so persistently vilified this noble impulse that they have succeeded in persuading us into regarding it as one of the lowest and most disgraceful and bestial in our nature. The mere mention or discussion of its processes and mechanisms is regarded as immodest and indecent, and their very existence is officially ignored.

An imitation virtue called modesty has been called into existence for this very purpose, and as the bird of Minerva, the goddess of wisdom, is the owl, so the bird of modesty, the goddess of prudery, is the ostrich, with its head in the sand. We have allowed the mere facts that this impulse is possessed by the animals, that it is at times of overmastering power, and that like any other natural impulse it may be followed to injurious extremes, to blind us to the fact that it is the basis and beginning of not merely conjugal but also maternal and filial affection, in fact, of the family and all the softening and ennobling influences that cluster around it; and upon the family is built the state, the nation, and the world of civilization and progress.

Instead of being, as we have been falsely taught, one of the most blindly selfish and ruthless of impulses, it is only the natural and instinctive impulse of man, whose aim is the existence and welfare of others than himself. The mere fact that it is

of animal origin counts to-day in its favour instead of against it, for the study of origins has given our pride a sad but well-deserved fall by showing us that three fourths of our virtues have been inherited from the animals, while an equal share of our vices have been invented by ourselves. The dove on her nest, the dog on the grave of his master, and the tigress daring all odds in defence of her cubs, are as pure and touching pictures of love, of devotion and faithfulness unto death as those of any haloed saint or legendary martyr, and far more beautiful to look upon and more wholesome to imitate.

The haphazard, unspecialized, jack-of-all-trades condition of affairs of letting the same organism produce both male and female cells and leaving the offspring to shift for themselves was soon to be abandoned for better and more workmanlike methods. The first great step in advance was the production, not merely of two kinds of germ cells but of two different kinds of individual, each of which was to produce one kind of cell. This had the great and obvious advantage of first insuring a mixture of the strains, and second of allowing each type of germ cell to become specialized and thus better fitted for carrying out the part it has to play. A curious difference in size begins to manifest itself at once, *ova*, or female cells, apparently robbing the male cells of their share of

nutrition and becoming from ten to twenty times larger than their partners, while the latter shrank in like proportion. This is where the subjection and comparative insignificance of man began — and has continued ever since.

At first the individuals who produced the two different types of cells remained exactly similar in size and appearance, as they do to this day, for instance, in the vast majority of fishes, snakes, tortoises, alligators and other reptiles. But it was not long before advantage began to be taken of this division of labour to specialize and advance still further, and the organisms which produced the female germ cells, or ova (eggs) began to assume certain characters which fitted them better for the part which they had to play, in fact became female; while those which produced the male cells, on the other hand, assumed other distinctive characters which marked them as males.

The differences between the two sexes for a long time, however, remained comparatively slight. It is impossible for the untrained eye to distinguish between the male and female of most fishes, and even an expert will often have much difficulty in deciding without making a dissection. As a rule the female is slightly the larger and somewhat the duller-coloured of the two, and apt to be more sluggish in her movements and more retiring in her habits, so as to avoid the attack of natural

enemies. The male, on the other hand, though smaller and brighter-coloured, begins to display the true masculine qualities of aggressiveness, pugnacity and vanity. But all things taken together, the sexes are far more equal at this time than they have been since, or ever will be again — until the suffragettes win their fight.

This monotonous and uninteresting state of affairs exists until another factor comes into play, and that is the first beginnings of care for the young. Hitherto, with a few rare exceptions, the young, whether split, bud, sexless new cell, or fertilized ovum, have been simply turned adrift in the water or upon the earth to shift for themselves. In the simplest and most primitive form of reproduction, of course, the cutting themselves in two of the one-celled organisms, like the ameba, the white corpuscles of our blood, the parasite of malaria, etc., there can be no question of parental care. Indeed it would have taken all the casuistry of the schoolmen to decide which of the two new cells was mother and which was daughter, and the question of seniority between them would ever remain as insoluble as that of the age of Ann. In fact here is where the eternal uncertainty as to the precise age of woman began — it would all depend upon which was separated first, when the maternal cell cut itself in two.

The animals which bud off their young from their

sides are naturally as indifferent to their future welfare and as incapable of furthering it as the plants which they so closely resemble. So that it is not until the sexes become entirely separate and are so well able to take care of themselves as to have some energy and skill to spare for their young that the beginnings of parental care first appear. It is true that certain worms lay their eggs in packages or capsules and appear to take a kind of vague interest in them until they are hatched; and some of the crustaceans, such as the lobster and crayfish, attach their eggs by a tenacious gummy substance to the concave under-surface of their powerful swimming-tails, where they remain until the young are hatched. But with these exceptions it is not until we come rather high up among the fishes, in the salmon and the sunfish tribes for instance, that definite, purposeful parental care begins to show itself.

Oddly enough it first shows itself most actively and definitely in the male, so that the proud and haughty claim so often put forward by the superior sex that motherhood is an older and far higher function than fatherhood is not as well founded as might be desired. The mother does not even build the first nest, for this office is undertaken for practically the first time in the animal kingdom by the male salmon, who, in that singular spawning pilgrimage up from the deep sea — the

oldest and most sacred pilgrimage on record — swims two or three days ahead of the female up the rivers and streams until a suitable spawning ground is reached. As soon as this is reached he picks out a clean, gravelly bar at the foot of a rapid, and energetically scoops out with his snout a basin-like nest or spawning bed, carefully removing all the larger stones and coarser gravel so that a smooth, even bed of fine gravel remains. This he vigorously defends against all other males, if he be big and strong enough, until the arrival of the females, when he proceeds to fight for and "cut out of the bunch" the lady of his choice, who thereupon deposits the precious layer of eggs upon the smooth, gravelly surface he has provided.

When she has done this she becomes a fine lady at once and takes no further care of her offspring, but the anxious and devoted father, after carefully fertilizing the eggs, stands, or swims, guard over them day and night, fighting away any other salmon who would invade his domain, and especially their greatest enemy the speckled brook trout, whose favourite and most appetizing dish is an omelette of salmon's eggs *au naturel.* For which greediness, by the way, he is punished with most poetic justice, as the higher fishman baits his trout-hooks with these tempting morsels, with most killing effect.

The same domestic virtues are displayed by the

common sunfish, or "pumpkin-seed," of our ponds and rivers. So plucky is he that he will sometimes even attack your hand, or the tip of your fishing rod if it approaches his treasure too closely, and a pretty sight he makes with his spines erect and all his colours flashing in the sun as he dashes hither and thither to repel all invaders. So, while it may be true that no man can make a home, it is not true that no male can. Upon primitive biological grounds it would appear that man ought to be the head of the house, but of course "*nous avons changé tout cela*" long ago. The giddy, pleasure-loving mamma and the hard-working, domestic "poor papa" are exceedingly venerable institutions biologically

When once this division of labour in the care of the young has been fairly established, the two sexes become rapidly and markedly different. Though they remain for the most part nearly equal in size and weight, the male becomes the stronger and more aggressive of the two and usually better provided with weapons of attack and defence, such as teeth, horns, etc., to fit him for the duty of defending the female and young from attack and of capturing and bringing home food. The female, on the other hand, becomes more vegetative and receptive in her temperament, quieter in her colouring and her habits, so as to escape notice and attack when brooding upon the nest or caring for the young. The sexes now become

for the first time easily distinguishable even to the causal eye, and the stage is illustrated in the great majority of birds, a few of the higher reptiles, and a considerable part of the insects. Eggs are still deposited and fertilized outside of the body and hatched by the heat of the sun, the water or the earth.

In one rather striking particular the difference between the sexes is just the opposite of what we would, upon modern grounds, have expected; and that is that practically all the decorations characteristic of sex — the *secondary sexual characters* as they are termed — are possessed by the male. And this singular and most unjust discrimination on nature's part is maintained not only through the whole of this stage, but up though to the highest of them all, until finally, at the human level, women win the rights which they now imagine have been theirs since the beginning. To the male alone belong the splendid plumage, the glowing colours, the piercing melody of song among birds — the nightingale, that floods the moonlit glades with her song, by the way, is not a "she" but a "he"; and it is the male that wears the magnificent horns and antlers, the splendid crests and manes, the most glistening satin and velvet of coats and furs, the whitest ivory tusks, and gains the highest triumphs of both speed and strength among animals. Man is fundamentally

and really the ornamental sex and always retained his rights up to the very beginning of civilization, when they began gradually to be wrested from him by the other sex, which has now acquired a complete monopoly of them. If it comes to a question of lost rights and liberties it is man who should agitate for emancipation rather than woman. Woman, not content with usurping all of man's ancient rights, now demands his modern ones as well, and she'll get them too: she always "arrives," as the French say.

Here we reach the summit and perfection of the mechanisms of race continuance so far as the parents are concerned — a father who fights and forages and a mother who feeds and protects. In fact nowhere is there to be found a more beautiful picture of parental devotion and family life than in the famous and now pillar-of-the-church "birds in their little nests." In passing it might be remarked, as a matter of cold biological fact, they do not "agree" at all, but squabble furiously and shamelessly for the next turn at the dish of worm or caterpillar which is being passed round, and shoulder one another out of the nest with the most majority-stockholder heartlessness as soon as they are strong enough. The young cuckoo in the nest is not the moral monster that he is made out to be. Any other fledgling that could get as far ahead of his brothers in size and strength

would do the same. Birdlings, like certain nestlings of higher degree, are little more than hunger incarnate, and know no other law.

Both father and mother bird take part in the nest building, in which, however, the male is only a hod-carrier, roundly bullied and "bossed about" by the directing female, "just like folks," as Eugene Wood says.

Both the parents take an active part in the incubation of the eggs and divide the really appalling labour of "rustling" food for the young.

But here they stop and a much less picturesque and attractive group of living creatures take up the thread of race continuance and carry it on to its highest perfection — the *mammals*, or "animals" proper. They take up the process where the birds left it, so to speak, and proceed to develop it along a side line which had hitherto been almost neglected, and that is the careful and loving specialization and perfection of the place where the young are to be incubated or hatched. Traces of this preparation begin, of course, at a very early age in the history of life; in fact, it is, as in all other stages of the process, the logical development of a beautifully simple and rational idea. Some fishes, as we have seen, prepare nests in the bed of the stream and watch over the eggs while hatching. Snakes seek out a hollow in the ground, preferably upon some sunny bank, where their

eggs can be hatched by the heat of the sun. Turtles come up on the tropical seashore and scoop great holes in the warm sand in which to deposit their bushel of eggs. Birds of course have their nests in which the young, no longer left to the casual rays of the sun, are hatched by the brooding warmth of the mother's body.

But it was millions and millions of years before the simple and beautifully sensible idea appears to have presented itself to any creature that the safest, the most appropriate and logical nest for the hatching of the eggs was where they were originally budded off, within the body of the mother. Finally, some Miles Standish-like mother-creature adopted the motto, "If you want a thing done well, do it yourself," and concluded that hatching, unlike charity, should not only begin but end at home. This of course necessitated the fertilization of the eggs without their leaving the body of the mother, but when this problem was once solved a perfectly superb power of extension was given to parental care and consequent perfection of development of the young.

How enormously valuable and far-reaching this new idea was may be seen by the fact that even to this day the rank of an animal in the scale of organized life runs curiously parallel to the length of time which it has been incubated in the body of the mother. The perfection of any animal,

including man, depends largely on the length of time that has been spent in hatching him. If he comes out of the maternal incubator one tenth hatched, as it were, he is a fish; if half hatched, a bird or reptile; if three quarters hatched, a marsupial mammal, and if fully hatched, a carnivore, ungulate or primate. No other animal of his size and weight is hatched more than half as long as man is, except his double first cousins, the anthropoid apes.

Many of the creatures display an astonishing amount of intelligence over the solution of this problem before settling it within themselves. Certain birds, like the ostrich, for instance, as is well known, lay their eggs where the heat of the sun is convenient for their development in the daytime, and only sit on them at night. Some birds, like the famous brush-turkey of New Guinea, actually reach such a hen-wife stage of intelligence as to build huge nests, or mounds, of decaying vegetable material, in the middle of which they deposit their eggs to be hatched by the heat given off in the process of decay, exactly as the Egyptian chicken-farmer of to-day builds his stack of straw and horse-manure and buries his basket of eggs in the centre to be hatched by the heat of its "sweating." But the beautiful simplicity of making the body of the mother the incubator dawned late on the animal mind.

Hazy glimmerings of the idea appear very far back indeed and some of them take to our eyes singular and even grotesque forms. In the first place, some of the earliest and crudest experiments in this direction were made, not by the mother but by the father. In other words, to use a Hibernicism, fathers were the first mothers.

The very earliest rudiments of attempts at self-hatching of the eggs among vertebrates occurs in certain forms of fishes, notably the toad-fish of our southern Atlantic coast, as discovered and most painstakingly worked out by Gudger, in which the male fish scoops into his enormous mouth the eggs as they are laid by the female and, tucking them into his cheek-pouches, i. e., certain recesses which develop between his gill-clefts, shelters them, not in the hollow of his hand, but of his mouth, until they are fully hatched. Fancy going about with a mouthful like that through half your summer — no wonder man developed into the silent sex!

The next stumble in this direction was also due to male initiative and came a little higher up in the scale, in those familiar but unattractive creatures, the toads, who should be given great credit for it and really are entitled to "wear this precious jewel in their crowns." In the species which bears the proud and appropriate name of *Alytes obstetricans* the eggs are laid in long strings by the female and picked up by the male, who winds

them round and round his body, especially under his armpits and round his waist, and thus enswathed squats about in nice moist corners until the young toadlets burst from their coverings and hop away.

Another most ingenious gentleman of the same family, but of a widely different species, the Surinam toad, has "a brain on him" like a Standard Oil magnate, for he actually first conceived the brilliant idea of suggesting to the dull mind of womankind that she might take a part in the process, for which original conception he is entitled to a monument of triple brass from the grateful and admiring males of all species that have come after him. Think what would have been our lot if the whole burden of incubation had been thrown upon our shoulders as it began to be, instead of deftly shifted by this Napoleonic mind on to the broader and much more capable shoulders of the female. We had better give the ladies what they want in the way of trifles like the ballot at the earliest moment consistent with saving our faces lest they become exasperated and demand a return to first principles and emancipation in this regard also.

This gentleman from Surinam, after, probably, having worn an undershirt of sticky eggs about as long as he cared to, hit upon the bright idea of handing the work back to the female, and one

day — probably when she wasn't looking — peeled off a few of the eggs and poked them slyly in between some loose folds of skin on her back. The scheme worked admirably — for the male and the tadpoles — and the female apparently didn't much mind it, but submitted to the imposition, until to-day in this species it is the fixed and regular habit of the male to pick up the eggs as they are laid by the female, with his fore-paws, and poke them into scores of little pouches which have developed all over the skin of the female's back. Here the youngsters comfortably remain until their hatching is completed, when the mother toad bursts out into an eruption, like a sort of giant small-pox, and literally perspires tadpoles at every pore.

After these two Newtonian thinkers comes a long, long gap, and it is not until quite high up in the snakes, at the very top of the serpentine tree, in fact — and then apparently because the males were not intelligent enough to volunteer to act as pioneers — that the eggs came to be delayed long enough in the body of the mother before being laid to undergo more or less complete development. The name of the famous viper, for instance, which is now a household word, is simply a contraction of *vivipara*, literally "alive-borning," from the fact that the eggs were delayed so long in the body of the mother before being laid that some

of the embryos hatched under cover and others within a few days of having been deposited in their underground nest.

And since the process has been carefully studied it has been found that the eggs of many snakes are laid with their contained "chickens" in quite an advanced stage of development, so that it is quite difficult to get snakes' eggs for purposes of embryological study in any but the latest stages of development. In fact, in not a few snakes' eggs, when they are broken for the purpose of making an omelette, you find the youngsters sufficiently grown up to crawl away, and if they happen to belong to a venomous species and you try to stop them they will coil up and strike at you with all the viciousness of Medusa's locks. This is the most appalling — and only — instance of Original Sin to be found in the animal kingdom; and from the point of view of the snakelets it is of course you who are the sinner.

There was a dim foreshadowing of this method even farther down our family tree among certain perch-like fishes of the Pacific Ocean, among whom some of the mothers retain the eggs in their bodies until the young fry are hatched and ready to swim. But this appears to have been, so to speak, little more than oriental inertia on the part of the mother and led nowhere, so far as further perfection of the process was concerned.

It was not until Time's noblest product, the last, and so far — until the Superman comes — highest, branch and crown of our family tree is reached, the mammals, or warm-blooded creatures, covered with fur and nursing their young, at home, so to speak, is universally adopted and carried to full perfection. It is now so familiar to us on every hand, so simple, so logical, so "natural" as we say, that it is difficult for us to believe that it took at least ten or fifteen millions of years from the beginnings of life to reach this wonderful and beautiful method of race-continuation, and from two to four million years more to elaborate and perfect the idea.

Even among the earliest mammals the process is evidently still in the experimental stage. Up to a little more than a century ago it was generally supposed that the earliest forms of mammals were the marsupials, or pouched animals, so called from their carrying their young during infancy in a curious pouch of skin developed on the anterior surface of their bodies. But with the discovery of the Lost Continent of Australia, which had been suddenly cut off by the ocean from the rest of the earth's surface, while its animal inhabitants were all in their most primitive forms, came the uncovering to our astonished gaze, not merely of scores and hundreds of new species of marsupials, but also of two or three small groups of

even more primitive and extraordinary mammals, covered with fur, armed with claws and teeth, and in almost every respect resembling some of our smaller burrowing animals, which actually made nests and laid eggs. One of them, the now famous duck-mole, or duck-billed *platypus*, to make the weird resemblance to a bird even more striking, had, as his name implies, a bill like a duck.

The full imperial title of this oldest Father of Men is *Ornithorhyncus paradoxus vel anatinus*, the most interesting and important single creature that ever lived, as worthy of veneration and worship as any Greek philosopher or Roman emperor. Another species was also found with the same singular habit of egg-laying, the spiny *Echidna*, a small animal closely resembling a hedge-hog or a porcupine. By the side of their classic antiquity the great pyramid becomes as modern as a sewing-machine.

Both *Echidna* and duck-mole, however, have the root of the matter in them and are on the upgrade toward full mammalianism, as they both occasionally retain the eggs within their bodies until they are upon the point of hatching, and both tenderly care for and nurse their young.

It remained, however, for the next grade of animal life, the marsupials, to take the last important and almost final step in the direction of the nurture of the young by substituting for a large egg

crammed with yoke and white to supply food for the embryo during its growth, and enclosed by a leathery, horny, or chalky shell, a very small germ cell with only a few drops of yolk food, surrounded by a thin and delicate envelope, through which it can draw its nourishment directly from the blood of the mother while remaining within her body.

The point at which the germ cell is, so to speak, grafted on to the interior of the body of the mother is called the *placenta*, and the coil of blood vessels which form between this and the body of the developing embryo to supply it with nourishment is known as the umbilical cord, from the fact that it enters the body of the embryo at the centre of its anterior surface. But even their courage seems to have failed them, so to speak, in the very middle of the process, for instead of allowing the young, called at this stage the embryo, to grow and develop within the body of the mother, fed from her tissues through the veins of the umbilical cord, until it is completely developed and able to shift for itself, they turn it out less than half hatched, as it were.

The young kangaroo, for instance, is born at a stage about corresponding to the third or fourth month of human embryonic development, then picked up by the mother and stowed away safely in her marsupial pouch. Here it finds the nipple

of the milk-gland and at once grasps it firmly with the only muscle of its body that is thoroughly developed, i. e., the constrictor, or ring-muscle of the mouth and lips. It attaches itself permanently, and the tip of the nipple expands within its mouth so that the embryo could not let go if it would and is thus literally "buttoned on" to its source of supply for several weeks, until its mouth has again grown larger than the end of the nipple and it disengages itself and begins to poke its head out of the pouch to see the world.

This curious bit of life-history, though interesting enough as a transition stage, would at first sight appear to be of mere academic interest were it not for the almost incredible fact that it has left its mark upon the throat structure of every mammal since. If you will open your own mouth wide before the mirror you will see hanging down from the centre of your palate a curious little tongue-like process about half an inch long, known as the uvula. It is of no earthly utility now, except to make a nuisance of itself by getting inflamed, swelling and sagging down until it tickles the larynx and makes us cough, and then furnishing a fee to the laryngologist for its amputation. In the young marsupials, however, and in our own embryos at about the fifth month, and in the young sucklings of several animals, notably the horse, this uvula is a broad, square-tipped curtain of

muscle hanging down from the palate and grasping firmly the epiglottis, or shield of gristle, which stands up in front of the opening of the larynx, or voice-box. When this connection has been established, it allows a continual stream to flow down the throat on either side of the opening of the windpipe, without any effort on the part of the youngster and without any danger of his choking.

Nature never forgets an old trick, and this curious waterproof continuous passage down the throat on either side of the windpipe revives again in all its perfection in the throat of the young of a very far-wandered mammal, the whale. This creature, living in the water, but warm-blooded and nursing its young like any other mammal, must arrange for the swallowing of the milk by the latter by some other means than suction, as this requires a drawing in of a fresh supply of air. Nature meets this emergency by providing the young whale with this waterproof palate-larynx combination, and the milk-gland of the mother with a compressor-muscle which squirts the liquid in a steady stream down the youngster's throat.

But with the discovery by some either more or less enterprising than usual kangaroo-mother that it was "just as good, and far less trouble," to carry the embryo on to its full stage of development at home without bothering herself with a pouch and its exceedingly heavy and troublesome burden

— for the young "Joey-kangaroo" stays in his pouch and is carried about, like a young lord in his carriage, until he is nearly one third as big as his mother — the final and perfected stage of the race-continuing process was reached. Final, that is, unless Science, in response to the woman's demands for complete emancipation from the burdens and responsibilities of sex, invents some wonderfully devised and perfect incubator in which the human embryo can be hatched as chickens are now, and desirable human strains may be combined and propagated outside of the body freely and with complete indifference to sentimental and conventional considerations.

The only changes from this on have been a gradual lengthening of the period of incubation or internal care of the young, which has expanded from the six or seven days of the early mammalian forms to the nine, ten or eleven months of the highest forms. This has been found apparently the longest period consistent with the welfare of the species, the limit being probably due to the fact that any further extension of the period would involve the bearing of the young by the mother for more than a year and consequently through two seasonal periods of hardship and famine, winter or summer as the case may be, which would be too great a risk.

It is worth while noting perhaps that the breed-

ing season, or time of birth, of the young in animals almost universally corresponds with that period of the year at which food for the mother will be most abundant during the nursing period, or at which there will be the best supply of food, or the best climatic conditions for the young as soon as they begin to forage for themselves. Fawns and the calves of wild cattle, for instance, are born in the very early spring, so that there will be an abundant supply of grass for the mothers at the time when the strain of nursing will begin to tell and also for the youngsters when they begin to browse.

But even this lengthening of the time is not sufficient to allow of the care and training which is needed for the development of the very best and most successful types of "children"; so to meet this, the period of infancy, or time of dependence on the parents after birth, is even more markedly increased.

The young of the lower animals are born like those of the lower birds (ostriches, chickens, etc.), with all their wits and senses about them, ready to run and look out for themselves almost from birth. But as we rise in the scale, the young at birth gradually become more and more helpless. Young birds are born with their eyes closed and destitute of feathers, young mammals half blind, without any fur or hairy coating, and capable of doing little but crawl and whimper; and finally

the human infant is born with his eyes open, it is true, much to the surprise of Landseer and other dog-loving bachelors, but without a particle of natural protection in the way of furry clothing, and so helpless and dependent that he is unable to walk or stand alone for a year or more, and does not arrive at full maturity until he is twenty-five years old.

With this step education is born, which means much to the child, and even more to the parents and to the community. The child is the greatest teacher ever born, and it is no mere mystic figure of speech that in the upward march of civilization "a little child shall lead them." The true millennium is just dawning — the Day of the Child. War marked the day of the Man, religion the day of the Woman, with the Day of the Child will come the service and the brotherhood of man. When we recognize that our highest allegiance is to the Child, the coming generation, as representing the future of the race, then Heaven will "come true" upon earth, and we won't have to die to reach it.

Man, so far as his bodily structure and functions are concerned, is but the highest, the most exquisitely contrived and the most beautiful of the animals. Small wonder that the mating impulse, which secures the continuance of the race, should exercise an influence over his emotions and con-

duct which is powerful in proportion to its dignity and profound importance. But there is no need to exaggerate the power of its sway, either for good or for evil, as is usually done. Notwithstanding the ecstatic pæons of the poet and the troubadour on the one hand, and the equally unbalanced reprobations and denunciations of the priest and the moralist upon the other, it is extremely doubtful, as a matter of cold biological fact, whether the mating impulse, or romantic love, ever at any period of life controls or dominates more than one tenth of the activities and conduct of mankind. Venus, the goddess of perpetual romantic love, at one end of the scale, and the Vestal Virgin, or the nun, as the emblem of perpetual frigidity and renunciation, at the other, are both equally untrue to life and abnormal; and both deeply tinged with insanity.

In the first place, probably not more than one man or woman in ten is capable of developing a really high class attack of the "*grande passion*," such as would be fit to go into a novel or become the subject of a poem. Secondly, the vast majority of men and women fall in love, or imagine themselves to be so, which is the same thing, not once and forever, so that they will be blighted beings ever after if they fail to win the prize, but ten, or a dozen times, once or more a year in fact, all through their salad days, until the "right per-

son" comes along and puts an end to the continuous performance by marrying them. Then of course this was the only case of "true" love, all the others being mere imitations. Whereas, as a matter of fact, any one of the preceding attacks, third, seventh, or ninth, as the case may be, would have proved just as "true" if it had happened to end in marriage.

The ease with which boys and girls fall in love is only equalled by the exquisite facility with which they fall out again; and there is never need for any one to lose their sense of proportion and humour and imagine that their lives will forever after be a blank and a desert drear if they cannot get the particular person for their life partner who happens to embody for them all the charms and the virtues of the opposite sex in that particular week of the May or June of their life.

In fact, it should never be forgotten by those under the sway of this impulse, first, that when this attack passes they will probably have several others, equally severe and enjoyable, and, second, that as nature has laid down through all the æons of the past and will quickly teach them in the bitter school of experience, if they are blind to her warnings, the real purpose and meaning of this impulse is not the enjoyment or necessarily the happiness of the individual, although this is usually enormously increased and best secured thereby,

but the welfare of the race and the interests of the next generation.

The only considerations which ought to be allowed to influence our choice of a partner for life are those rising out of the fitness, physical, mental and moral, of the object of our affections to be the father, or mother, of our children. If we can feel sure upon this point, then it is usually safe to follow our impulses with little regard to what others may think.

No other consideration should count in this greatest throw in the game of life, and when a real man marries a true woman, whom he both loves and can respect, happiness and success are nearly sure to follow, regardless of race, rank, social position, or money. The charm and attraction of man for woman and woman for man are so infinite and inexhaustible, they meet and fill each other's needs and requirements in such a multitude of ways and such myriads of aspects of life, that if they but join hands upon a basis of mutual affection and repect, with good character, good health and good temper, and the disparity between their ages and dispositions be not abnormally great, nine times out of ten they will both congratulate themselves upon their good fortune until the day of their death.

Although there are plenty of delightful instances of love at first sight which burns without wavering

or fading "until death doth part," yet these form but nature's high and chosen aristocracy of love; and the main thing for all youths and maidens to remember is that if they refuse to accept an unfit mate, no matter how attractive or how rich or how titled, they need fear little difficulty in falling in love with the right and fit one, whenever he or she shall appear. Also, that there are as good fish in the sea as ever were caught, and that the man or woman who goes down to the grave single for lack of at least four or five opportunities to marry is as rare as the proverbial hen's teeth.

This high and noble standard of choice is even more obligatory upon us to-day than ever before, for the reason that we now know that mental and moral characters are inherited just as definitely and almost as surely as physical ones; that as the parents and grandparents are so will the children and grandchildren be. It therefore becomes our deepest and most binding biological duty to give to our children the best and the cleanest and the bravest inheritance that we can possibly secure for them; indeed we have no right to bring children into the world with any other.

Nature after millions of years of experiments has determined that the best form of union, resulting in the birth and upbringing of the highest and fittest type of children, is the union between one

man and one woman for life, or at least for the whole long period of infancy and training, which, starting at the maturity of the parents, means practically the same thing. It must not for a moment be imagined that monogamic marriage is a thing of purely human device, let alone of legal, ecclesiastic or social invention. It was established by experiment and had proved its superiority in the animals millions of years before man appeared upon the scene.

Not only is it a sin against nature and treason to our best instincts to mate for considerations of money or rank or social position, but even more so, of course, to exercise this wondrous power for any other purpose than that for which it originally grew up — the continuance of the race stream. Nowhere else in the world does nature preach a clearer, more unmistakable message of clean living, of high thinking, of noble self-control. Control, as over all our other natural instincts and impulses, not because self-denial is a virtue in itself — far from it — but control in order to enable us to fulfil the impulse in the highest, most efficient, most perfect manner, which is also in the long run far the happiest, as well as purest. Faithlessness to this standard brings invariably with it its own punishment, and always has done so through all the pages of human history. Racial morality, like all other true morality, is inherent

and self-existent, and needs no conventions of society or laws of man to enforce it.

If any other warning were needed, nature has placed on either side of the path of rectitude, like the angels with flaming swords at the gate of the Garden of Eden, two of the most merciless, the most destructive and disgraceful of diseases. But their warning is only for the dullest and basest ears and the most clouded eyes; and the depiction of their dangers is as little needed by high-minded, clean-living, race-worshipping youths and maidens as the terrors and penalties of the criminal code are for the majority of mankind.

CHAPTER XII

RELUCTANT PARENTAGE

EVERYTHING in this world is comparative — nothing absolute. The most important question about a condition is not so much is it good or bad, injurious or beneficent in itself, but is it better or worse than the state which preceded it? And the second is like unto it, does it tend to make the future conditions better or worse than the present? In other words, it is not so much where we stand, as whether we are on an upgrade or down. This is peculiarly true of that much-vexed problem popularly known as race suicide. The mere coining of the name was a real public service. It set forth so clearly and vividly the possible dangers which might result from the prevalent course, or rather drift, in respect to the first and greatest commandment given in Holy Writ: "Be fruitful and multiply, and replenish the earth." Clearly any policy or lack of it which diminishes the reproduction of the more desirable elements in a race or community, and leaves the lion's share of the growth in population to be contributed by the less desirable elements, is fraught with danger to

the future of the race. It was also of great value in emphasizing and publicly asserting the great moral law, founded upon the broadest and most ancient, not merely of religious but of biologic bases, that our first and greatest duty is not to ourselves but to the race. The race has the first mortgage upon us and our powers, and has had ever since we lay in the ooze of the tide flats and vibrated to the pulses of the sea.

To-day, Jew and Gentile, Christian and Agnostic, Philosopher and Scientist, all unite in holding that the highest of all laws, before which all others should bend in consideration, is the welfare of the nation, the future of the race. Brought before the bar of this tribunal, it would appear as though our modern attitude toward race fruitfulness was deserving of severe condemnation, and of little else. And in part there can be no question that it is. That a considerable and increasing element of our population is becoming unwilling to rear children cannot be seriously denied and, in so far as this unwillingness is due to a selfish shirking of the expense, labour and responsibility involved, as expressed in the familiar phrases, "Don't want to be bothered with children," "Children interfere with your having a good time," it should be visited with the severest reprobation. Any man or woman who solely, or even chiefly, upon such grounds, refuses the duties of parentage is a traitor to the race and a coward and a skulker

in the battle of life, and should be branded and despised accordingly.

But while this motive unfortunately exists and assumes a most unpleasant conspicuousness in all public discussions of this question, and is avowed with distressingly cynical frankness in most private ones, it is to be doubted whether it is really responsible for more than a very small percentage of the tendency which it is alleged to explain. Any family physician can tell you of scores of young married couples who have frankly avowed this attitude, but the vast majority of them became ashamed of it later. Many times when it was perhaps too late they would have given anything to be able to undo the results of their selfish and short-sighted folly. It may be pointed out, in passing, that the crime of such offenders against the higher racial morality is self-punishing. It prevents the continuation of the breed of this stamp of individuals, which is a blessing rather than a curse to the community.

As Burke long ago pointed out, "It is impossible to frame an indictment against an entire people," least of all on such a low and discreditable a ground as this; and we must look further for the real forces which chiefly underlie the tendency. In my judgment there can be little serious question that at least two thirds of the modern unwillingness to bear children is based upon considerations affecting

the welfare of the child, rather than that of the parents. It is of course an open question whether much of this feeling is not mistaken and from a rational point of view another form of selfishness; but it is a perfectly legitimate and honourable motive and the question it raises one which may be frankly and freely discussed upon its merits without any imputation of discredit, or making us despair of the future of the race. In fact, the only difference between the good old times of large families and the present era of smaller ones is that nowadays we face the problem squarely, while formerly it was dodged and left to settle itself.

There are few problems which are surrounded by a thicker fog of misconceptions. The first and most ludicrous of these is the idea that the problem is a *new* one. It dates back to times long before the dawn of history. Instead of being a mark of the decadence due to civilization, it was not until civilization was well advanced that infanticide was ever regarded as a crime at all. Practically all savage, most barbarous, and many civilized tribes, such for instance as the much-boasted Spartans, habitually and publicly abandoned or destroyed superfluous infants without the slightest compunction and as a matter of routine. The life of the child absolutely belonged to the father, and he could dispose of it as he would, not only without hindrance, but without criticism. Even so well developed a

code as the early Roman Law formally recognized this power of the father over his children until they had passed their majority. In many tribes, female infants were habitually destroyed unless concealed by their mothers, because they were regarded as useless incumbrances in a community of warriors. The practice even developed into the dignity of a ceremonial or religious rite, and conferred merit and credit upon those who followed it. Instead of infanticide in every imaginable form being a modern crime, it is one of the oldest iniquities in the world. In fact for thousands upon thousands of years it was considered a virtue. While as to methods of preventing or terminating conception, many a tribe of Australian black fellows, running naked and killing snakes with their teeth, could give startling pointers to our most expert abortionists of the twentieth century. In short, one of the best and most foundational characterizations that can be given of the three great stages of civilization is that savage means with stationary or diminishing numbers, barbarous with slowly increasing, and civilized with rapidly increasing population. Whatever criminal charges may be urged against civilization it certainly has not resulted in diminishing the fertility and rate of increase of the race. Over against all the jeremiads and wailings about decadence, diminishing fertility, declining birth rates, race suicide and the like, the cold, massive, indigestible fact remains,

solid as a granite obelisk, that the rate of increase of any known civilized community is greater than that of any known savage or barbarous one; and that with the single exception of France, those nations that stand highest in the scale of civilization are increasing their population at the most rapid rate. The population of England for instance has increased in the past fifty years more than 100 per cent.; that of Germany nearly as much, while our own land, which is held up, and probably justly, as the worst offender of all in the matter of intentional race suicide has grown in the last thirty years from fifty millions to ninety millions, only twelve millions of which was due to immigration. So far as the testimony of statistics goes, race suicide, in the sense of race extermination is as remote as the millenium, and as arrant a bugaboo as the Jabberwock.

Of course it will be instantly objected there are scores of other factors besides the mere number of children born per family, which play a part in this rapid increase of civilized communities. The abolition of famines, for instance, by the increasing abundance of food supply and improvements in transportation, the victories over and harnessing to human use of the great world forces — wind, steam, water and electricity; the vastly increasing knowledge of the nature and causation of disease, enabling us to stamp out epidemics and lower the death rates. All these have to be taken into consideration.

Precisely; but the point is that all these strides of progress are a product of precisely the same intelligence which leads the race seriously to consider the problem — to bear or not to bear children. We have intelligently and voluntarily diminished the size of our families in order that we may be able to feed, to educate, to protect better and more abundantly, those children that are born. And Wisdom is abundantly justified of both her children. Within reasonable limits and indeed so far as the progress has ever gone hitherto, the diminished size of the family has been more than compensated for by the increased vigour, health and efficiency of the children reared, so that the net result has been to lessen the waste of life and to increase the growth of population instead of diminishing it. A high birth rate is anything but a sign of high racial vigour or national progress. Indeed, by apparent paradox, it is a commonplace of vital statistics that a high birth rate, almost invariably means a high death rate and particularly a huge infant mortality. This is true not merely of different nations and of races in different regions and climates, but it is also true of superior and inferior races living side by side and of the different classes in the same nation. Our Negro and Indian populations in this country, for instance, have a higher birth rate than that of the surrounding white population, but such an enormously increased death rate and

infant mortality that it more than neutralizes this, so that the Negro is increasing more slowly than the white man, if indeed he be not at a standstill; while the Indian is steadily declining in numbers. The birth rate of our slums population is high, but their death rate rises in proportion, so that the net increase is only slightly greater than that of the more fortunate classes of our population. I am unable to find any adequate basis whatever for the dread that there is any danger of the more intelligent, more efficient and more desirable elements of the population being physically swamped by the high birth rate of the weaker and less desirable classes. If such an event should occur, it would be absolutely at variance with all the experience of the past and with the whole tendency of evolution. To put it brutally and frankly, from a racial point of view, the question is not of limiting or not limiting the number of children, but of how it shall be limited. Our choice practically and racially lies between preventing their coming into existence or weeding them out by starvation, by disease and neglect after they have been born. Which is the more humane method?

The second great misconception which confuses most discussions of this problem is that this modern tendency to limit the size of families is a mark of moral degeneracy, of lack of patriotism, of unwillingness to sacrifice one's own comfort for the good of the race. We are told from many a pulpit that the

modern woman is becoming forgetful of her chief and highest duty, to rear children in the fear of the Lord: or that, if she recognizes this duty, she is rebellious against it. And we are pointed admiringly and regretfully to the good old days of two hundred, one hundred, even fifty years ago when mothers saw their duty to Church and State and meekly performed it in the shape of families of eight, twelve, and fifteen children.

There are only two defects in this beautiful dream of the days of old when "none were for the party, and all for the State; and the rich man helped the poor and the poor man loved the great." The first is that neither the fathers nor the mothers of these huge families had any particular intention, or indeed idea of sacrificing themselves for the race, or doing their duty by the community; they were simply following their instincts and taking the consequences more or less patiently — and stupidly. The second is that, with the exception of the small wealthy class, these large families, if valued at all, were valued chiefly as a source of income to their parents from the earnings or work of the children during their time of dependence. We rightly denounce the modern sweat shop and the factory or mine crowded with child-workers, but let us remember that a larger percentage of the children of these huge families among the working and farming classes a hundred years ago were

underfed, overworked, beaten and ill-treated, stu ted physically, and deformed morally, than of the children of any civilized community to-day, even in factory towns. We may mourn over the decadence of family discipline and bewail the waning sanctity of the marriage tie, but the conditions which prevailed in many and many a model family of the large and hard-working type, common a century ago, were crueller and more intolerable in their injustice than eight tenths of what is revealed in our divorce courts to-day.

As a matter of fact, scarcely the slightest trace of intelligence or intention, or of deliberate forethought, entered into the production of these ideal, big, old-fashioned families, except where the parents expected to profit by the labour or wages of their offspring. How many of them, for instance, would have come into existence if the mother had been for a moment consulted about the matter? How many of the surplus children, whose lives must inevitably be wasted in the attempt to rear ten children upon means adequate for four, would vote for the continuance of such a plan if they could be consulted? The parents to-day who are the strongest advocates of small families are those who were the members of large ones themselves. As a friend of mine, humorously but practically expressed it: "There were ten of us, and when father brought home candy, we just got a lick

apiece: I am going to see that my children get a whole stick each!"

The only difference between the selfish parents of to-day and the self-sacrificing, devoted ones of a century ago is that the former think about the problem while the latter didn't.

The third great misconception which befogs this question is that such tendency toward race suicide which exists is chiefly the fault of the woman in the case. This is little better than the belated echo from the Garden of Eden: "It was the woman that thou gavest me!" The prospective male parent of to-day is just as keenly alive as his mate to the burdens and handicaps imposed upon him by an unnecessary profusion of offspring and, what is more important and fundamental, to the serious injustice committed against the child brought into the keen, remorseless struggle for existence without the best of rearing, training and equipment. It is true that the heavier physical burden and penalty of child-bearing and child-rearing falls upon the mother, but this is more than offset by the depth and power of her maternal instincts.

Women may shrink from and evade and postpone even indefinitely the risks and responsibilities of motherhood but the woman who would deliberately and contentedly face the prospect of going through life without ever having a chick or a child of her own is distinctly a *rara avis*. And when you get down

to the real feelings and the bottommost thought of even the most blasé man of the world, or the most inveterate old bachelor of clubdom, you will stumble upon a primal longing for a child of his own to carry his name and keep up the traditions of the family, or a sense of secret bitterness and disappointment if this has been denied him.

The race-continuing instinct is the deepest and most primitive in our nature, and the more we strive to smother or defy it the more surely it will wreak its vengeance upon us. A man or woman without children or desire for any is as rare and contemptible as a man without a country. The man who prefers his club and the woman who prefers her lap-dog to children exist, but they have violated the highest law of racial morality and the deepest instinct of their being, and they pay the penalty in disease, debauchery and disgrace, and the loathing contempt of all right-minded people — a contempt so deep that it finds difficulty in expressing itself in words. Our consolation, from a racial point of view, is that in their case the law of the elimination of the unfit is producing one of its most striking demonstrations and most useful results.

But there are many who deny themselves absolutely privileges of fatherhood and motherhood upon grounds which are not only selfish or in any way discreditable, but of the highest and most unselfish. I refer to that small but rapidly in-

creasing class who refuse to bear children because they believe themselves, rightly or wrongly, likely to transmit physical or mental defects. This attitude is one of the highest triumphs of biologic morality and racial ethics, and is entitled not merely to our profoundest respect and warmest encouragement, but to our deepest sympathy. Next after the deliberate laying down of his own life for his country it is the highest and hardest sacrifice of which any human being is capable. Each instance of this sort should of course be most carefully and thoroughly studied by at least four or five medical and biological experts so as to establish most firmly and unquestionably the existence of such a defect in the blood of the individual and the probability of its transmission to offspring. Not only so, but the precise percentage of such offspring which are likely to inherit this defect should be worked out as nearly as possible. For it must be remembered that the mere ability to come to such a decision as this indicates the attainment of a high plane and the possession of both mental and moral qualities which it is exceedingly desirable to have transmitted to the future generation, if the physical handicap be not too great.

It must also be remembered that, according to the best evidence at our disposal so far, defects of all sorts, both physical and bodily, are, as their name implies, negative, not positive, reces-

sives, not dominants in the Mendelian scheme of heredity, and that the risks of their reappearing in future generations are much smaller than we at one time supposed. But, putting it roughly, the chances are at least five to one that they will be dominated or neutralized by the vigorous, healthy characters in the ancestry, especially if the other parent happens to be born both sound and descended from healthy stock. To put it very roughly: Bad qualities tend to breed out — good ones to persist; otherwise evolution would be a progress downward instead of upward. The chance of three healthy, desirable children to one possible defective, is certainly a legitimate risk to take, from both the individual and racial point of view.

The one danger of this race conscience, this biological scruple, lies in the fact that it will often be active in the most desirable elements of the community — those who ought on racial grounds in every way to reproduce their kind — while it is entirely absent in those who ought most to be conscious of it — the real defective, the *roué*, the drunkard and the criminal. The remedy for this is not to diminish the realm of this scruple but to increase it, to broaden the field of its operation until it includes not merely the defective parent, but the other one, usually the mother. It should be regarded as an outrage against herself, and a crime against the State for any mother to bear children

to a father whom she knows to be either mentally or morally unfit to be a father. This should not only be publicly avowed by the community, but should be enrolled among the laws of the State and the precepts of the Church. The former is slowly recognizing this, as our increasing roll of divorces testifies; the latter is, as usual, fighting it tooth and nail. The moment that any woman discovers that she is married to a drunkard, a libertine, a brute or a criminal, that moment she ought to be set free from him, not merely for her own sake and for that of the children already born, but still more for the sake of those who never ought to be born. When this has once been accomplished, we may begin to look for a real and effective elimination of the unfit, a diminishing of crime and pauperism and a new standard of purity in the marriage relation which some people may find it difficult to live up to. We talk of the menace of the criminal class — biologically considered, there scarcely is a criminal class. The three vengeful furies of race purification — disease, drink and dirt — do their deadly work upon the criminal so effectively, saddle him with such a low birth rate and enormous death rate, that he would die out within three generations if left to himself. But his ranks are recruited so steadily year after year by the failures, the misfits, the black sheep of the classes above him, a large percentage of whom are children

born by unwilling mothers to more or less respectable, drunken, reprobate, or brutal husbands, from whom they have vainly struggled to get free.

To sum up: I believe that the evidence shows that race suicide, so far as it has yet gone, has proved an almost unmixed blessing instead of a curse; that the race can never again return to the method of blind and wholesale reproduction without thought of the future or calculation of the ultimate result. On the other hand, the tendency to limit the number of children within reasonable limits is likely to broaden and spread, and will also be rationalized and purified. No class or group in the community which believes itself worthy to exist can of course consider any proposal to limit the offspring of a marriage to less than three, or such number as may be necessary to secure the survival of that quota of adult age, so that the second generation may be at least a trifle more numerous than the first. Otherwise it would of course either become extinct or be practically overwhelmed by the rest of the community.

Biologic morality, while deprecating the production of children who are either likely to be born unfit or become so from lack of proper support and adequate training, glorifies and exalts, as both the highest racial duty and the most precious individual privilege, the production of children by those who are both personally fit to bear and finan-

cially competent to rear children who will be of value to the State. There is no achievement better worth living for, no more valuable legacy that can be left to the future, or more enduring claim to honourable remembrance than a family of well-born, well-reared children. And this feeling is steadily spreading among the great intelligent upper stratum of the middle class, the real aristocracy of any country. The pendulum has already started on its return swing and in the reasonably and honestly successful classes of the nation, fair-sized families are beginning to be looked upon as desirable luxuries, quite as well worth spending money upon as automobiles or fine horses or balls and dinners. We are beginning to take a pride in breeding pedigreed human stock instead of confining ourselves to horses and dogs and poultry. Children are coming to be as desirable adornments as they were in the days of the Roman matron. At the same time, there is a growing tendency to encourage and promote in every possible way the marriage at a reasonably early age of young people who are particularly desirable as future ancestors, to use a Hibernicism. Some day, possibly, we may become sufficiently intelligent to endow this sort of matrimony with State funds.

The general progress of modern civilization has markedly diminished infant mortality, together with all other death rates. How far have the well-meant

experiments of philanthropy assisted in this and how far have they hindered? One of its first and most natural attempts, the institutional treatment of children, has been weighed and now almost unanimously found wanting. Babies can be raised cheaply by wholesale, but they are apt to be a cheap machine-made product, without individuality or initiative. No place like home for growing *live* children in, and a baby's best friend is its mother, or failing her, its aunt, or older sister. The community will save money by paying them to take care of it instead of endowing foundling hospitals and orphan asylums.

Another practice of doubtful value has been that of preaching to the poor to be content with their wages and with that station to which it has pleased Providence to call them, instead of encouraging them to fight for higher wages and a fairer share of the products of their toil. Life, growth and progress are all wasteful instead of economical. The economical nations of the world are the stagnant ones. The chief cause of infant mortality is poverty; the second and third its cousins, ignorance and dirt. The only radical cure for poverty is higher wages. Philanthropy has not addressed itself positively yet to the practical side of the problem, raising wages and shortening hours; the poor have been left to fight that out alone. Poverty is not a permanent nor a necessary state, still less a desirable one, or a means of grace. It is an accident — a

disease and a preventable disease at that. Everything that we do on the positive side toward preventing poverty will prevent disease, infant mortality, dependency, pauperism and crime. From 20 to 40 per cent. of the large infant mortality of English factory mothers is attributed to immaturity and prematurity, which means underfeeding, overwork, or over-breeding of the mothers.

Of even more doubtful value is the plan of teaching the poor to use cheap foods, especially for their children, to make the little that they have to go a long way. The little is made to go a long way chiefly by diluting it with water, as in soups in soup kitchens, or with starch and indigestible vegetable fibre and husk, as in cornmeal, oatmeal, bran bread, mushes, beans and coarse vegetables. We would not dream of living on these things ourselves, they are nearly all either grossly defective in proteins, like cornmeal, potatoes, and rice, or loaded with irritating and indigestible elements, like beans and peas and oatmeal and nuts, or consist chiefly of salts, water and vegetable fibre about as digestible as cocoanut matting, like the green vegetables and the salads. A cheap food, eight times out of ten, is cheap because it is deficient in nutritive value, or lacks one or more important elements, or is beginning to mould or decay. Children must have expensive food, an abundance of proteins, sugars and fats, if they are to grow up into men and women worth while. To preach

economy in feeding infants, or their mothers while nursing them, is to preach a high death rate and stunted survivors, ready to become paupers and criminals.

Another experiment of doubtful value is that of encouraging mothers to go on working up to and directly after child-birth and neglect the nursing of their own children. Anything that helps to make this easier, such as crèches and day nurseries especially such as receive infants at ten days old, ought to balance very carefully the good they may do against the harm they certainly do. The child is the ward of the State, just as much before he becomes an orphan as afterward. One of the great German municipalities some years ago boldly recognized this fact in regard to illegitimate children. They were placed in families and taken care of by the city at an early age, with the ironic result that their mortality rate dropped to half that of the legitimate children! Why can't the non-bastards of the exploited classes have a little of that same fostering care? The best and most paying job that the community can set any mother at is that of raising her own child to the highest pitch of efficiency and intelligence. Some day we'll have sense enough to pay her to do it and feed herself well in the process, though the ultimate and permanent solution will be to give higher wages to the father.

It is to be doubted whether the habit in philanthropic circles of encouraging mothers of the working

class to bear large families, or offering prizes or exemptions from taxes for all children above a certain number, or discouraging any deliberate attempt to limit the number of children is either a helpful or an intelligent one. A high birth rate practically always means a high death rate and a huge infant mortality. The production of a larger number of children than can be adequately fed and properly trained is one of the most serious complications of the problem and obstacles to social progress. The quality of children reared is vastly more important than the quantity. A large amount of human raw material is required for purposes of selection, but some of that selection had better be made *before* birth instead of after. Man and his intelligence are a part of nature, and we are steadily substituting an intelligent consideration of the problem to bear or not to bear children, for the old, stupid, cruel, wasteful method of producing as many children as the Fates permitted, and leaving Nature to weed out the less fit by disease, starvation, and cut-throat competition. Infanticide and abortion are ruinous physically as well as criminal morally, but are they as cruel to the unfortunate infants concerned? An intelligent selection of those individuals who shall or who shall not bear children, a thoughtful determination not to bring into the world more children than we are reasonably able to raise and equip adequately, mark the path of future progress.

CHAPTER XIII

THE AMERICAN MOTHER

UPON most points our conceit is robust and colossal. We are the people, and knowledge shall die with us. Word excavators inform us that the primitive meaning of that somewhat vague but mouth-filling term which those of us of Germanic blood are so proud to apply to ourselves, "Teutonic," is simply *the* people. But we are delightfully inconsistent, in our vices as well as our virtues, and there is one point at which our comfortable armour of conceit gapes widely and crumbles before the lightest spear, and that is the breeding of the rising generation and the training of our young. That alone of all our modern ways of doing things we humbly admit, nay, make haste to loudly deplore, is far inferior to the practice of our mothers and fathers, and still more so to that of our grandfathers and grandmothers.

It is not necessary that any one should reproach us with our shortcomings in this regard. We lift up our voices of our own accord and loudly bewail the disappearance of the home, the weakening of family ties, the selfishness of parents, and the irreverence

of the young. We are quite sure that the modern father cares very much more for his business, his club, and his politics than his parental duties, and that the modern mother is much more deeply absorbed in the culture of her mind, in the expensive adornment of her person and in the pursuit of social prestige, than she is in the care of her children and house.

The reasons for this gratuitous poor opinion of ourselves and our generation are not far to seek. Much of it is the natural and inevitable result of the dreadful contrast between the real and the ideal, our own childhoods as we so clearly remember them, and the childhoods of our fathers and mothers, as they have so often described them to us, ideally happy and wholesome and perfect. Our parents were so supernaturally wise and devoted and we ourselves so impossibly good and obedient, that it is quite out of the question to expect to see such another little heaven below, in the course of our existence upon this mundane sphere. And, of course, we don't, for the simple but sufficient reason that two thirds of what we are pleased to term "recollections" of our early childhood are as pure moonshine and fairy tale as anything between the covers of the Green Fairy Book, or even in the pages of Sir John Mandeville, or Baron Munchausen. The stories that we relate at reunions, or in old home weeks, or pour into the eager

ears of our innocent offspring, are not so much romancings, as they are, in the language of Mr. Gilbert, "attempts to lend an air of artistic verisimilitude and interest to an otherwise bald and unconvincing narrative." The skeleton of them, so to speak, is approximately true, but when we clothe them with flesh and blood, and the glow and colour of life, the resulting legend is much more nearly a rendition of what should have happened to us, or what we would like to think did happen to us, than an actual transcription of the cold and colourless facts. After we have told them half a dozen times, with successive modifications needed to produce the required impressive effect, we actually come to believe them ourselves, and, as all the other boys and girls of long ago stand by us, both from a spirit of true comradeship and to insure our backing for their flights of retrospective imagination, our childhood memories become a thing of rosy vapours and purple lights, and the heights that we could jump, and the weights we could lift, the number and size of the boys we licked, and the beauty and wit of our little sweethearts of long ago, something to marvel at and remember with delight.

Naturally, nothing like that ever happens nowadays in the cold and garish light of day, only in the light that never was on sea or land could such things have been seen. Another reason, and one which comes closely home, is that we have lost the blessed

and happy faith of childhood. We are perfectly convinced, and rightly, that our mother was the best woman in the world, and that our father was wisdom and omniscience itself, and could lick any other man in town. Do we for a moment believe this, can we, even if we try, of the fathers and mothers of our own day and generation whom we see about us in the shop and on the streets? They're nothing but overgrown children who, like ourselves, have in some absurd and utterly illogical manner, taken it into their heads to have other children of their own. The only difference that we can see between the two is in their size and age. Are they anything like "Father" or "Mother?" Perish the thought! We are in something the same attitude as the big, overgrown, bashful booby of a farmer's boy who was afraid even to speak to a girl, and whose father one day finally lost patience and scolded him roundly for not looking about and finding some girl to marry. "Why," he said, "at your age I had been married three years and had a house and farm of my own." "Well, but, dad," complained the boy, "that ain't the same thing at all. You only had to marry mother, while I've got to go hunt up some strange girl and ask her to marry me!" The preposterous fathers and mothers of our own day and generation are, and will ever remain to us, simply strange girls or altogether too familiar boys, playing at being grown up

and keeping house. Fathers and mothers aren't what they used to be when we were young, nor children either.

As a matter of fact we were as ordinary, trifling, lazy, impudent little "varmints" as the sun ever shone on, or ever will. But could you make any of us believe it now?

This is the chief, I had almost said the sole, ground for those jeremiades about the inefficiency and the selfishness of the modern mother, and the indifference and lack of sense of responsibility of the twentieth century father which we hear on every hand. Whenever we try to make the comparison between the new family life and the old, "fond memory brings the light of other days around us," and we see the past as a bright rainbow against the black thundercloud of the present and of the future. Yet I am convinced that our forebodings are but such stuff as dreams are made of, and that there never was a time when motherhood was more devoted and unselfish, and fatherhood more anxious to give and sacrifice everything to make the rising generation happy and successful as now, and there certainly never was a time when they were one half so intelligent or one quarter so well equipped for their task.

The charges that are most commonly brought against the modern mother in general, and the American mother in particular as the most flagrant

example of that alleged traitor to her family and her race, the New Woman, are: First, that she is physically incompetent for the tasks and strains of maternity; second, that she is selfish in that she prefers her own comfort and good looks and success in life to either the number or the health of her children; third, that she has become so ambitious for independence and for public recognition that she is neglecting the duties of her home. Fourth, that her management of her children is remarkably injudicious, that she has no idea of discipline and they are spoiled and pampered and allowed to grow up without any respect for their elders; fiftlh that, partly by the weakness of her own nerves and partly by the unnatural and unwholesome conditions of food, housing, dress and social habits, she permits her children to grow up under, she is impairing the stamina of the race and undermining its future.

Not one of these charges will stand the light of inquiry, and most of them go up in smoke under the first drop of the acid test of investigation and comparison. To take the gravest and most fundamental charge first: Is the American mother of to-day physically unfitted for her vital and noble task, the bearing and rearing of children? Nothing could be more disastrous than her failure in this regard, and, from a biologic point of view, no triumph or achievement of man, however brilliant or spec-

tacular, can compare in dignity, in nobleness, and in value to the race with the bearing of children. The home is the real centre of the world, round which all its activities, its pomp, and pageantry revolve. For its defence, armies march forth to battle; for its support, smithies ring, and looms whirr, and great industries grow up, and trade empires are built. For its protection and health, courts are established, and senates meet, and churches raise their spires toward heaven. The chief duty of man, in the biological catechism, is to grow in wisdom and vigour, in honour, in kindness and happiness up to thirty years of age, after that to enable his children so to grow. This is his only excuse for remaining longer on the planet after they appear.

The real and supreme test of any civilization, is the quality of the men and women it produces, the character of the children that it breeds. The old German proverb goes to the heart of the matter: "The best of everything is none too good for the child." If the American mother is indeed undermining her physique and her reproductive vigour, she is guilty of high treason against her race and against the community. What is the testimony in support of this grave charge? For the most part, vehement asseverations full of sound and fury signifying nothing. Occasionally the picking out of a few isolated instances, from which it is argued that the process is universal. The more carefully they

are examined, the more completely do these allegations and alleged exhibits resolve themselves into varying forms of the ancient delusion that the golden days were the good old times, when all the men were brave and patriotic and honest, and all the women virtuous and devoted, and that there were giants in those days before whom the creatures of these degenerate times are little better than pigmies.

When we come to actual data and measurements, and get down to the hard pan of actual fact, there is a surprising agreement pointing in exactly the opposite direction. If the American woman of today be degenerate, neurasthenic, lacking in stamina and constitution, one would certainly expect her to show it in a diminishing stature, a lessened chest expansion, a lower weight, a higher death rate, and in greater liability to disease. Upon all of these points, nine tenths of the statistics available, point in exactly the opposite direction. Never in the history of the human race has there been such a marked improvement in height, weight, chest girth, longevity, and morbidity as in the last fifty to seventy-five years, and this improvement has been most rapid and striking in the last twenty-five years, just the very period in which this alleged degeneracy has been most rampant. Accurate and reasonably reliable statistics in regard to health and vital conditions have been available for about only forty years, but in that time the general death rate has decreased

nearly forty per cent., the average length of life has increased thirtyper cent., the average height of adults has increased nearly an inch, and the average weight between ten and twelve pounds. These statements are based upon Board of Health statistics and upon measurements running up into the thousands, and, in some cases, hundreds of thousands, made upon soldiers, college students — the average height, for instance, of the Harvard students since 1861 has increased nearly an inch, and the chest girth and weight in proportion — upon factory operatives, and upon school-children. The objection may, of course, be raised that as, in the nature of the case, most of these measurements have been taken upon men, can we be sure that the same process is taking place in women? Fortunately this doubt can be laid at once, for vital statistics of course include impartially both men and women, and at almost every age, with the single exception of one decennium in the period of child-bearing in women, the lowering of the morbidity (percentage of illness), has been greater in women than in men, the increase of longevity has been nearly two years more, and the decrease in the death rate has been greater. In the matter of height, weight, and chest girth, such smaller numbers of measurements of women as has been made show also in the same direction. Girls in schools, for instance, have not only made a greater increase and improvement in height and weight than

boys but have actually at certain ages absolutely outstripped them, and are for a time the physical superiors of boys of their own age, though, of course, usually inferior in muscular vigour. Incidentally it may be remarked that most of even this inferior muscular difference in girls is due to our antiquated and senseless training in the matter of dress, development and ladylike behaviour, and the avoidance of tomboyism. Not infrequently nowadays, where children are allowed to grow up unspoiled and natural or what is usually termed "thoroughly spoiled," a girl will become the head of the gang or the bully of the school.

In short, there never was a time in the recorded history of the world when women were as well abreast of men physically as they are to-day. What they lack in mere muscular vigour and pugnacious achievement they fully make up in vegetative vitality and powers of passive endurance and resistance. Women, in spite of the outcry which their sensitive nerves often make in advance, bear real pain and prolonged suffering more patiently and bravely than men do, and stand them better. They can maintain some sort of a physical equilibrium upon smaller amounts of food, and with less air and out-of-door exercise than men. They will stand for half a lifetime a monotonous drudgery of unending work in a treadmill called home that would drive most men to drink or the insane asylum within five years. Contrary

to popular impression, they resist most diseases better than men do, not merely in proportion to their size and muscular strength, but absolutely and, oddly enough, this discrepancy is most striking in the acute infections, such as tuberculosis, pneumonia, and typhoid, in all of which the male death rate is slightly, but distinctly, higher than the female. Between five and ten per cent. more men than women die of tuberculosis, for instance. Almost the only class in the community in which mortality and morbidity of women exceeds that of men, is among farmers' wives, and for reasons which are perfectly obvious to any one who has ever lived on a farm. Even here the greater death and disease rate shows only in those two ten-year periods when many farmers' wives are engaged in working themselves to death and bearing too many children at one and the same time. It used to be a common saying in the Middle West, thirty years ago, that most of a certain type of successful farmers were living with their second and third wives. Now, thank heaven, that type of woman has learned either to assert her rights to survive and share in the prosperity that she has built, or get a divorce, and then we lift up our hands in holy horror at the increasing lack of reverence for the holy sacrament of matrimony.

It hardly needs an inspection of dry vital statistics and musty records to prove that the American woman is not deteriorating physically, but distinctly im-

proving. All that is necessary is to keep our eyes about us. How often will you meet a mother whose grown, or even sixteen-year-old daughters are shorter than she is? When in any previous age could you pick out in any community, or in any assembly, such scores of tall, graceful, fresh-coloured, vigorous young Dianas and Bacchantes capable of taking their part and of making it interesting for the average man with the raquet, the golf club, the paddle, or in swimming, cross-country tramping, mountain climbing, and dancing all night long. It is a common saying that the tall girl has become fashionable, and therefore she has appeared in scores. This involves a high compliment to the magic power of woman in making herself anything that she chooses to be, and far from an undeserved one. Boast as we may of belonging to the Superior Sex, in our heart of hearts we know perfectly well that women can make not only herself but us about what she chooses. We have almost the solid and simple faith of the small boy, who, while gazing with open-eyed wonder and delight on the picture of an elephant standing on a wine glass, was pained by the suggestion of a skeptical elder brother that it was impossible for an elephant to do such a thing. Turning a reproachful gaze upon the scoffer, he solemnly declared: "There just hain't nuffin' that a effelunt can't do!"

But apart from the exercise of such mysterious

and occult powers, there is not the slightest question that the enormous improvement — in food, in good ventilation and fresh air, in exercises and in play, and in rational amusements, and more healthful and sensible methods of life generally — which has taken place within the last thirty years is nowhere more clearly and delightfully shown than in the increasing vigour and intelligence and happiness and power of initiative of the girls and young women of to-day. Nor is this improvement confined simply to the tennis-playing and country-club supporting classes of society who are producing the athletic type of girl in such increasing numbers, but it is almost equally true of the great middle class and wage-earning eight tenths of the community, as is shown in the most unexpected but most convincing and prosaic fact, that the sizes of ready-made clothing, including shoes and gloves, are steadily increasing all over the United States, so much so that the numbers of twenty years ago are almost a size too small for girls of a corresponding age, or for adults, to-day. The more distinctly American the region, in the best sense, that of improved food, housing, and living conditions, and a more equable diffusion of resources and advances throughout the community, and the more striking is this change, as shown by the fact that the size of gloves and shirtwaists, for instance, which suit the Boston trade are too small in Chicago or Cleveland. Any one who will walk through the

retail districts of one of our large cities, just after the closing hour, and note the flood of tall, well-grown, happy-faced young girls, with graceful carriage and fresh colour, that sweeps past him and can continue to believe that American womanhood is degenerating is a pessimist whose reason is closed to the evidence of his senses.

But some one may object, does this necessarily prove that the American woman of to-day is as well or better fitted than before for her maternal duties? Is it not possible that she may have increased, so to speak, selfishly in general physical and bodily vigour, but have lost ground in respect to her power of continuing the race stream unimpaired? From a biologic point of view it is hardly possible to conceive of such an anomalous form of development, but it is not necessary to argue the matter on *a priori* grounds, as, fortunately, statistics here are as definite and convincing as in regard to her general physical vigour. The American baby of to-day has, with the exception of certain congested areas, populated almost exclusively by recently arrived foreign-born immigrants, the lowest death rate, the lowest disease rate, and the highest average weight and length at one year of age of any baby in the world. The American school child of to-day is taller, heavier, and of greater chest girth than the children of any European nation, and this superiority is not the result merely of a sudden blossom

ing out in a better environment of higher wages, and greater opportunities for betterment, but is cumulative, as in our schools children of foreign-born parents are taller and heavier than the foreign-born children, the children of the second generation of American birth are slightly taller and heavier yet, while the list in physical superiority is headed by those children who have been for three or more generations American.

The second charge against the American mother — that she prefers her own comfort and welfare to either the number or health of her children, in other words, she is becoming unwilling to assume the cares and responsibilities of motherhood — is more difficult to meet and decide upon. In support of it we have the unquestioned and apparently damning fact, that not only are the birth rate and the marriage rate steadily diminishing, but that the number of children born per family has undergone a distinct and, apparently, alarming decrease within the last forty years, from a little over five to about three and a half. This shrinkage in the size of a family being most marked in the so-called higher and more intelligent classes in the community. But there are two important side lights upon this statement, one of which is that this decline in the birth rate and shrinkage in the size of the family is by no means confined to America, but is an absolutely world-wide phenomenon among

all civilized nations and, strangely enough, at first sight most striking among those who are forcing to the front most rapidly, or already leading the van of civilization. A further paradox appears in that, with the single exception of France, it is precisely those nations whose birth rate and number in each family are declining most rapidly that are increasing most rapidly in population. In other words, the phenomenon of the declining birth rate is a normal and natural accompaniment of progress, and the danger usually apprehended from it is almost purely imaginary, for the simple reason that it is everywhere, again with the exception of France, accompanied by an even greater decrease in the death rate, so that the net result upon population is one of gain instead of loss.

It stands to reason that a nation like India, with a death rate of over thirty per thousand and an average lifetime of barely twenty-two years, needs, to hold its own, double the birth rate and average size of family of a nation like the United States, with an average longevity of forty-three and a death rate of seventeen per thousand. It is an unbroken rule throughout the animal kingdom that the higher in the scale a species rises the slower becomes the rate of its reproduction, the longer its period of immaturity and the fewer the number of its offspring. And yet not a single instance is on record of a superior race having been exterminated by a lower,

while scores of cases could be cited where a small but aggressive superior species has practically, and even absolutely, exterminated a far more numerous and inferior one. Just so in human society; it has always been the classes that have played upon and exploited the masses, never vice versa.

The whole question of success to-day, both national and individual, is a matter not of quantity but of quality. This the American mother and father, on account of their superior intelligence, are more clearly and definitely recognizing than those of any other nation to-day, with the exception of France, and as a consequence the number of children allowed to be born has been deliberately kept down to the number that could be most effectively and intelligently nurtured, trained and equipped to the highest possible pitch for the struggle of existence. That much harm has been done, and serious damage to health and life incurred, by attempts to limit the number of children by abnormal and unwholesome means is, of course, regrettably true, but this has been a comparatively small matter compared with the benefits to both children and parents resulting from the process, and the general principle underlying it is sound, both from a biologic and economic and ethical point of view.

As we have seen the limitation of the number of children is no new thing, or special vice of civilization. One tribe of our North American Indians, for

instance, has six different forms of poisonous plants or roots which they use for the purpose of producing abortions. The Australian blacks, who have probably one of the lowest grades of social organization and civilization that have ever been studied, have incredibly elaborate and painful methods of reaching the same end, which have grown into the dignity of a religious rite. Nor is there any more basis for the kindred delusion, that in primitive times the reproductive process was as simple and natural and free from danger as any of the vegetative processes of nature. The death rate in childbirth of the savage and barbaric nations is higher than that in any civilized race, and all medical missionaries and government surgeons who have had opportunity to care for the women of savage tribes are unanimous in testifying that all the accidents and injurious after effects of the process, which are supposed to be peculiarly the penalty of the feebler physique and more sensitive nervous organization of the civilized mother, are just as common and disabling in the wigwam and the *kraal* as they are in the tenement and the palace. In fact the ease and safety with which the savage mother passes through the perils of maternity are purely imaginary and of a piece with the rest of the myths about the Noble Savage.

It is like the ancient delusion that the rich have more diseases than the poor, simply because no one has ever had the decency, or took the trouble, to

study out and adequately care for the diseases of the latter. Even the old idea that women, by civilization and education, were becoming so unnatural and feeble that they were no longer able to nourish their own children by nature's method, has been proved to be almost pure delusion, due largely to the perfection of modified and certified milks, and to the misleading and blatant advertisements on every bill board and magazine cover of the different kinds of infant foods and other substitutes for the real thing, all of which should be labelled Baby Poisons, for they kill and stunt at least ten times as many children as they save or help. In France, where they have really civilized ideas on such matters, they have a law making it a misdemeanour to give to any child under one year of age any form of solid food, or any solution prepared from solid food, without the advice and consent of a physician.

Investigations in a score of cities on both sides of the Atlantic show that the average mother in all ranks of life, even including the highest, is well able to care for her own children in from eighty-five to ninety per cent. of all cases.

In fine, from a physical point of view, no mother of history ever was better equipped for her task than is the American mother of to-day. And how much this means for the welfare of the future generation may be glimpsed from the significant fact that

nowadays in our best and most modern baby-saving stations we feed not the children but the mothers, and save fifty per cent. more children's lives than we ever did by the most elaborate schemes of sterilizing, pasteurizing or modifying cow's milk. What the mother is, that will the child be, not only physically, but, to an extraordinary degree, mentally and morally. It is not so much what you do for your children or teach them that counts as what you are. It is far more dramatic for a mother to die for her children than to live for them; but it is not half so good for the children, and maternal self-sacrifice should be balanced by a good wholesome share of intelligent selfishness in order to develop the best type of children. The best mother, both in the beginning and in the long run, is the one who takes the best care of her own health, of her good looks, and keeps up an intelligent interest in life, so that she may remain the delightful chum and the valued adviser of her children all their lives long.

Looked at from this point of view the third charge against the American mother, that her ambition for independence and public recognition is causing her to neglect the duties of her home, rings as empty as any of the others. Although the movement has naturally, here and there, run into bizarre and childish extremes, the main impulse underlying it is the fact that woman is outgrowing her ancient status, which was frankly that of slave

and house servant for life, and beginning to assert her own individuality to the end that she may impress that individuality upon her children and become their guide and protector not merely in the nursery stage and within the limits of the picket fence around the home lot but also during the much more critical and dangerous period of adolescence, girlhood and young manhood.

The increasing participation of women in business affairs is at bottom an attempt to make the street, the mill, the counting house and the store as clean, as healthful and as wholesome environments for boys and girls, and incidentally for women and men as well, as the home now is, and I can hardly conceive of any lover of his kind and friend of helpful progress failing to do otherwise than sympathize with them heartily. We have, to a disastrous degree, forgotten our obligations to our children in our attempts to build up industries, to carve out fortunes, to conquer the forces of nature. The real end and aim of all these triumphs is the child himself as the emblem of the future of the race. Until even our greatest cities are wholesome, happy places for children to grow up in, our civilization will be crippled, abnormal, and a failure upon one of its most important sides. And we children of a larger growth need this intelligent, humane consideration and will profit just as much by it as our little ones would. The club-joining, committee-belonging,

movement-promoting mother of to-day is simply endeavouring to organize and apply the greatest force known to humanity, the one great civilizing power — coöperation — to the problem of extending her care, and the care of humanity, over her children from the first ten or twelve years of their lives in the home to the equally important ten or twelve years when they are beginning to get their real start in and hold upon life. If any of the requirements of business, the sacred rights of property, or even of our most precious and antiquated political institutions and traditions are in the way, then so much the worse for them; if they conflict with the spirit of the new movement they ought to be wiped out, and many of them should have been on general principles a generation or more ago.

The direct result in woman of this increasing interest in public affairs is so to stimulate her intelligence and to increase her breadth of view as to make her not less efficient in the care and management of her children and her house but far more so. If there be any problem in the world which is in urgent need of the application of a little twentieth century intelligence and point of view to it it is the one of keeping house. In point of planning, of organization, of labour-saving devices, yes, even of sanitation, it is fifty years behind any other of the great productive industries of the day. The best we can do to remedy the situation is to let the women

engaged in it get out of it long enough and far enough so that they can get a good view of it from the outside, instead of leaving them swimming round, and round, and round in it, like gold-fish in a bowl, three hundred and sixty-five days in a year, all their lives long. That sort of isolated, perpetual drowning in petty details would dull the most brilliant intellect and kill initiative in anybody.

There is no better training for intelligent, sanitary, efficient housekeeping and home making than a short business or other public career before marriage. We are doing everything we possibly can to increase the intelligence and efficiency of the workers in all our other great productive industries — mills, and factories, and shops, and schools — shortening the hours, raising the wages, improving sanitary conditions—and yet we throw up our hands in horror at all proposals to increase the intelligence and the individuality of the workers in our greatest, most vital, and most profoundly important productive industry, for fear it will make them less efficient. The woman who has broadened her intelligence, increased the horizon of both her knowledge and her sympathy, developed her individuality, her judgment and her self-respect, by that most wholesome and profitable form of all educations, earning her own living, and making a success of it, is as much superior to the old-fashioned rule of thumb, wash-day, baking-day way, grandmother-used-to-do-it type

of housekeeper as a steam engine is to the stage coach. This is not a mere glittering generality based upon *à priori* reasoning. Ask any doctor of twenty years' experience in any American-born community or class, and he will tell you without hesitation, nine times out of ten, that the best mothers, the best kept and most healthy homes, and the best trained and fed and cared for children are in families where the mother has either earned her own living as a teacher, a clerk, a shop girl, or intelligent factory operative, or has had either the means or the determination to specially develop her intelligence and her individuality by, say a college course, or some form of private study or interest, or active work in philanthropic and the more intelligent social movements. Time and again I have heard the expression from my colleagues: "Now that's a family it's a real pleasure to practise medicine in; that mother is almost as good as a trained nurse, and better than a good many, because she knows how to use her brains in an emergency, instead of being carried off her feet by her emotions, or stampeded by her feelings." There is no better mother anywhere on earth, in my private opinion, from a very extensive experience on both sides of the Atlantic, none within twenty per cent. as good, as the intelligent, self-respecting, independent, American mother of to-day.

It is true that her independence, her self-respect,

and her regard for the interests of her children lead her to divorce her husband, or separate from a worthless or selfish husband, about once in ten or twelve marriages; but this is only what European women long to do, if they but dared, and there are few habits which have had a more improving effect upon the wholesomeness and happiness of the atmosphere in the modern home than this. So long as a husband practically owns his wife for life, unless he commits and is convicted of a gross and serious crime, as was the state of affairs under the old régime, and is yet in Europe, so long will there be many, many homes which, instead of being like a little heaven below, will much more closely resemble the other place of future abode. I can conceive of nothing which has a more wholesome and pleasing and beneficial effect upon both the character and the conduct of a certain type of husband than the knowledge that his wife is financially and socially independent of him, and that she will leave him promptly for the sake of her children if his conduct does not measure up to her standards of right, and decency, and courtesy.

It is this same fairer and broader view of life and its problems which is largely responsible for that marked change in the attitude of the American mother and, for the matter of that, the American father, toward their children which is so loudly deplored and denounced by melancholy moralists

and disciplinarians of all sorts under the term of spoiling. As a matter of fact, it is the spoiled child who is really fitted for success in life. He knows what he wants and how to get it. He has a high respect for himself and plenty of initiative. It won't do him a particle of harm to butt his head three or four times against the wall of failure in getting what he wants. He will strike a balance between what he imagines himself to be and what he really is, in the stern school of experience quickly enough. He has got the one great and indispensable qualification for success, individuality, initiative, willingness to work for what he wants, and to try to make everything bend to his own wants. He can't go very far outside of the nursery without discovering first that he must recognize the limits imposed by the strength and desires of others, and that he must make treaties with them in some way to secure their coöperation in getting what he wants in return for not getting what they want. This is the basis of what we are pleased to term morality and self-control. The only way and place a child will learn it is by actual experience, either in the family circle if it is big enough, or on the playground. Preaching, teaching, and the implanting of musty ideals have no more practical effect upon him than the classical water on a duck's back, and usually chiefly succeed in disgusting him with the very name of morality or piety, or if he be plastic and cowardly enough,

in making a little hypocrite of him before his time.

The day of reverence in the family, indeed of that feeling by any human being for any other, has gone by. Our sense of humour and of proportion has destroyed all that. One of our great popular preachers voiced the ancient ideal in vivid terms the other day. The child, he said, should be taught to regard its father as God's viceregent upon earth. How many of us American parents, I wonder, would have the face to stand up before our hopeful offspring and deliver ourselves of such a preposterous sentiment and keep our faces straight while we did it? God's viceregents on earth! It is only fair to say that the reverend gentleman was an Englishman and hence not to blame for his lack of a sense of humour. John Knox's uncompromising phrase addressed to King James, "God's silly vassal," would be much nearer the truth as we know ourselves. Who and what are we that we should undertake to impose our laws and our preferences and prejudices and our individualities absolutely upon another, even if that other be our own child? The best way to teach him to respect the individuality, the rights and the feelings of others is to teach him to respect his own.

It is astonishing what a perfect little code of natural, wholesome morality an intelligent, kindly treated, little disciplined and unbossed child will develop for himself before he is ten years old. All

we need to do as parents is to treat our children kindly, feed, clothe, house, and play them well, and if there be anything worthy of respect or imitation about us they will find it out quickly enough. If there is not, we won't make them believe it simply by telling them so, no matter how often we repeat it. One of the safest and most wholesome of corrective mottoes that I know of, for the parent considering his duties toward morals and the disciplinary training of his children, is that phrase of the current philosophy of the street today "Why do we take ourselves so — seriously?" Most of the atmosphere of scolding and reproach which marred the old-fashioned home, the ideal family life of the past, was due to the exhausted nerves and tempers of mothers weakened and soured by overwork, excessive child-bearing and responsibility, lack of fresh air and sunshine, and of intelligent amusement and change of interests. Much of the ancient and awful discipline of respect exacted for parents, of absolute prohibition of any "back talk," and of the attitude represented by such mottoes as "Children should be seen and not heard," was due to the desire to protect parental characters, conduct, and motives from the merciless and humiliating criticism of the *enfant terrible*. Part to the fact that the father seldom returned home save when utterly worn out and exhausted with toil or business cares, so tired that

he was utterly unfitted for anything but absolute rest, and the noisy play and gasconading chatter of the children rasped his poisoned nerves into fury and he had no vitality to enter into their plays and interests. That form of training for children is best which provides, first, the most intelligent, the most truthful, and most kindly parents, and then brings their children into the most intimate contact with them, with perfect freedom of conduct, and mutual self-respect and affection on both sides. This is the reason why the American child, in spite of his spoiling, his lack of reverence, and indulgence in all kinds of alleged unwholesome foods, and his precocious social development, turns out so remarkably well in the vast majority of cases. He is placed on the same sort of footing in his home that he will afterward have to stand on in life. The petty shifts of middle-aged, feeble minds and of mediocrity for enforcing proper respect from the young, and keeping them in their proper places, which encumber and cobweb every department of life and vigour of human activity in Europe, have been pretty well swept away here, though the process has not gone far enough yet. We hardly know what a snub or a "wigging" or a taking-down, or a sitting-upon-hard are in this country any more. It is no longer considered good form for school teachers, managers and foremen of businesses and shops, officials in the public service, even wealthy uncles

and crochety aunts and grandparents to treat with brusque severity and gross discourtesy either the children committed to their care, or the most upstart of young employees or inferiors. Consequently our children have no blind reverence about them, that is to say, no fear of having, metaphorically speaking, their knuckles rapped or their faces slapped whenever in their innocence and awkwardness, or even what we are pleased to term, their impudence, they happen to blurt out something that is displeasing to a short-tempered or conceited elder or superior. Shyness is a sign of fear, and intelligently trained and kindly treated children should know little or nothing of fear.

Broadly speaking, to spoil a child, provided of course that the process be kept within reasonable limits, is to put him on his own basis of conduct, action, and morality at as early a period as possible. To discipline a child, or to bring him up strictly, is to impose somebody else's standard of conduct and propriety upon him, and the natural result is that distressing phenomenon known as the sowing of wild oats. The minute a child gets his liberty he proceeds to make use of it, and the experiments he makes with his new hatchet at eighteen or twenty may damage him for life, while those which he would have made in the nursery would have resulted in nothing more than a few cut fingers.

The spoiled child of to-day is usually by twelve or

thirteen years of age, a perfectly companionable, live-withable little being, whose reason can be appealed to, whose promises, when secured, depended upon, and who will coöperate with you in any scheme of either play or work upon an effective and rational basis. The well-trained and thoroughly disciplined youngster of fifty years ago, at the same age, was often a perfect little devil of mischief and brainless adventuresomeness the moment that his parent's or teacher's back was turned. He would promise you anything and then do exactly as he pleased just as soon as he got out of sight, and if one of a little group of truants lied about what he had been doing, all the rest of them would back him up and regard such loyalty, no matter what its results, as the highest and most binding type of morality that they knew. Largely as the result of the absolute repression with which he had been treated, he would often indulge in the most foolish, and even cruel and disgusting, practices in private, just to assert his right to do something which was forbidden, something of his own accord, which we then contemplated with uplifted hands as another of the many evidences of Original Sin.

Another factor in the success of the American mother is the extent to which she has been enabled, on account of more wholesome and primitive surroundings of American life, to get rid of that abominable substitute and subterfuge for maternal

duties, the nursemaid. There have been few influences in family life which have done more to lower the moral standards and impair the refinement and the tastes of the rising generation than to commit young children at the most impressionable age of their life to the care and companionship of ignorant, stupid, often vulgar and indecent nursemaids and other feminine field-hands of that description. There can be no hiring of substitutes in this war. Every mother should spend at least one half of her time, and every father at least one quarter of his, in the direct personal care and education of their children. Shirking of this duty is treason to the race and to one's best self. Servants may be kindness and devotion itself, but they're a mighty poor substitute for real fathers and mothers, especially of the more intelligent class. There is a flavour about the child brought up chiefly in the nursery or under the care of servants, no matter how well trained, that is unmistakable. A free-born and unspoiled child does not like to lie, but he quickly learns the trick of fibbing if he has much to do with servants, who are still practically in the slave status, and whose only protection lies in the slave virtues of submission and deceit. The healthy, untrained child is almost absolutely fearless. Leave him much of his time with servants, and before he is five years old he is desperately afraid of the dark, his little imagination is stocked full of shapes

of terror and of danger of things that will catch him out of dark corners if he isn't a good boy, of giant cats that will come in through a window and eat him up if he doesn't go to sleep at once when his maid wants to get away for the evening; and before he is ten years old his clean little mind is crammed with all the vulgarity, the coarseness and indecency and debasing superstition which has been accumulating in the countryside and the stable-yard for the last five hundred years.

The more closely a child can be compelled to associate with his parents, within reasonable limits, the better it is for both — though it will be a little hard on the child sometimes. If you want your child to grow up civilized, keep him in the twentieth century while he is growing up, instead of relegating him to the dark ages of the nursery, or boarding school, and then wondering why he grows up such a young savage. This greater amount of personal care of our own children will, it is true, require a considerable recasting of our stupid and antiquated hours of business and plans of work, but that will be found to be one of its chief advantages. Every working day, from that of the bricklayer to the banker, should be so planned as to allow time not merely for proper rest, but wholesome recreation and social intercourse, including that with our own children and families. The net result will be, as shown now by thousands of experiments all with the same result,

that the amount of work done in the seven or eight hours of labour, will be twenty to forty per cent. greater and its quality improved in the same proportion. There is nothing we do quite so stupidly as work.

Another curse of mediævalism which the American mother has largely escaped is the boarding school. This institution is in part an evasion of parental duties, a hiring of cheap substitutes instead of fighting the battle yourself, and in part a survival of the old Puritan, priestly distrust of nature, the fear lest the child's mother will love him so much that she will not discipline him and harden him properly, a sentiment which found its frankest expression from the lips of the headmaster of one of England's most famous boy barracks: "The boy's mother is often his worst enemy." The boarding school for boys is, in fact, very largely a survival of that distrust of and contempt for woman, as such, which was a characteristic of the early Church and of the Dark Ages.

The institution had a certain amount of rational basis in the days when reading and writing were rare and wonderful accomplishments, and when families of education and refinement were scattered about, singly or in twos and threes at long distances from each other, and surrounded largely by a mob of servants or illiterate day labourers. But these conditions have changed radically — in fact in this country, fortunately, almost utterly disap-

peared. And I can conceive to-day of no atmosphere half so wholesome and improving for any child to grow up in, till at least the age of sixteen or eighteen, as his or her own family, or any school so desirable and so healthful for normal, sensible growth, both mentally and morally, as the public school of the country, village, or town in which he happens to be born. All the graces and accomplishments and social airs which may be required are but leather and prunella, which can be laid upon and varnished over this foundation of health, character, and brains in a couple of years by any skilful parlour varnisher and deportment expert. Though, as a matter of fact, most children will acquire these little arts and graces for themselves if they are allowed to mingle freely with their own family and friends upon all sorts of occasions, instead of being deliberately excluded for fear they may be in the way till they grow awkward and self-conscious and then suddenly launched into society with great fuss and ceremony, and formally permitted to "come out" of the state of unnatural rawness and clumsiness into which they should never have been driven. Most children if kindly treated and placed on their own responsibility, and encouraged to respect themselves, have naturally good manners.

The success of the American mother is in part due to the fact that she has a greater freedom of

choice in selecting the father of her children, and in deciding whether she will keep him or not if he proves unworthy, and to the further fact that she is putting her brains into her business of child-bearing, child-rearing, and home-keeping, and training and developing her powers to the highest possible degree for this purpose. The one point in which she could be improved is in regard to the direction in which part of that training is expended. Most of the higher education of women is a cheap imitation of the higher education of men, and as this is still a survival of the Middle Ages, the result is an enormous waste of time and energy upon dead languages, pure mathematics, and a strange mummy called pure literature, with all the life frozen out of it. However, our great democratic Middle West universities are leading the way now to a more rational, wholesome standard, and when the American mother is as thoroughly trained in the knowledge of her own wonderful body and that of her child, and their needs, in her knowledge of the chemistry of foods, and of physics, and hygiene, of ventilation and house management as she is in literature and dead languages and the undying stupidities and formalities of formal education, when she knows more of the effect of heredity and environment on the future of herself and her children and grandchildren than she does of the failures and stupidities and blunders of the past under the

name of history, then the millennium will really come, and we won't need to go to heaven to get it. The average American mother of the day being, fortunately, from our fairer and more equable distribution of wealth and resources, neither an overworked drudge nor a brainless parasite, is able to devote, and is devoting, more of her time, more of her thought, and more of her society to her children than any other mother in the civilized world.

CHAPTER XIV

THE DELICATE CHILD

THOUGH we worship principles and have a profound admiration for rules, our real interest is in exceptions. If we had some way of foretelling in advance exactly what was going to happen half of us would commit suicide out of sheer boredom. We know that everything proceeds along the remorseless sequence of cause and effect, and that it is vanity or worse to expect grapes of thorns or figs of thistles; but we can't help hoping that logic will prove a liar this time, and we live largely in the hope of the unexpected thing happening. Our principles and our hopes are as deliciously inconsistent as the Irishman who, after weighing his long-fatted pig at market, regretfully announced that "the crather didn't weigh as much as he expected — an', faith, he niver thought it would!"

Two and two we know make four — but perhaps some day they will make four and a half or even five; and this may be the time. This is the charm of gambling: that somehow, sometime, the good luck, which we know we have done nothing to

deserve and have no logical right to expect, will come to us. Most of us would rather make a hundred dollars on a long shot or a lucky throw than a thousand in the ordinary course of trade or service rendering, not so much because we object to the greasy drudgery of labour or slow monotony of business, but chiefly for the inherent charm of getting money "like finding it." The unexpected, the exceptional, has a peculiar and never-failing attraction and charm for us. That 's why we take such an apparently morbid and abnormal delight in stories of murder and bloodshed and crime — because they so seldom happen. Most of us will live patiently through a long life without seeing one really soul-satisfying and dramatic killing. We get so desperately sick and tired of the dull monotony of respectability and morality and propriety that we become as ravenous for the sensational and the gruesome as colts in a clover pasture are for salt. Like the angel child, Toddy, we croon to ourselves over and over again, with ghoulish delight: "And Bliaff's head was bluggy — bluggy as ev'ryfink!"

Absurd, irrational and, to the moralist and proverb-maker, lamentable, there is something sound and sane at the bottom of this instinct. Nature, like wisdom, is justified of her children. We do well to be keenly interested and to waste much time in speculating over the exceptional, for here is the seedbed of new discoveries, the starting-

point of new conquests. Here is the fault in the mountain chain that lets us see how the rest of the solid, level earth is built and planned; here is the gash in the smooth and unbroken skin of circumstances that exposes to view nerves and arteries and muscles beneath; here is the crack in the dull mask of familiarity that gives us a glimpse of volcanoes behind it. It is the study of the abnormal that often gives our first clue to the mystery of the normal. All our knowledge of the wonderful perfection of the human machine began with the study of its breakdowns. Here is one reason why we should not destroy the weaklings, or be in too great haste painlessly to eliminate the unfit.

Nowhere is our study of and interest in the exceptional better justified than in that wonderful little bundle of explosive complexities, the child. We know, of course, and have known in a general way for centuries, that what we as parents ought most to desire, and as teachers to be interested in, is the child who weighs between eight and ten pounds at birth; who doubles his weight the first year and sprouts two inches farther up the yardstick every successive birthday; who begins to walk at fifteen or sixteen months, and to talk at eighteen or twenty; who is of just the right size and intelligence to be dropped into the hopper of our educational mill at five years of age and

to be ground along through the successive years with the rest of the human grist, and survive the process without apparent harm.

Fortunately, such is the directive power of heredity, somewhere from eighty-five to ninety-five per cent. of each year's annual crop of children are born like this and grow like this; and it is well for the stability and prosperity and comfort of the community that it is so. A good, rock-ribbed, substantial foundation of honest mediocrity, of brainless industriousness, of monotonously uninteresting sanity, even of wholesome stupidity, is necessary for the continuation of the race and of civilization. Our great systems of education, with their worship of routine and lack of imagination, have decided that, since at least eighty-five to ninety-fiive per cent. of children are like that, this is the only kind of children that exists for practical purposes, the only kind they need bother their heads about. Hence our educational mill is built upon the admirable and ingenious system known in our factories as "standardization" and "interchangeable parts," illustrated in most striking form a few years ago by one of our great watch companies. They poured out into a tray the wheels, pinions, cases, hands, and so on of five thousand watches, shook them up together thoroughly, and then set a mechanic to pick out of the tangled heap at random the parts required for a watch and put them together. The

resulting haphazard watch ran perfectly and kept within a minute a day of accurate time.

According to the rules of our educational system, every child at a given age is exactly like every other child of the same age and size — or if it is not it should be made so; and the same methods, measures and standards are to be applied impartially to all. The system acts badly enough upon even the eighty-five per cent. of average common-place, normal children; but when it comes to the exceptional child whether the exceptionally gifted or the unusually defective then the result is most disastrous, either to the system or to the child and sometimes to both.

Usually the child gets the worst of it, and for the simple and significant reason suggested by the famous Stephenson, inventor of the locomotive, who when appearing before a Parliamentary committee for permission to open his first railroad, eleven miles in length, was pompously asked by a local big-wig: "But what, pray, Mr. Stephenson would be the consequences supposing that a cow got on the track?" "Well," said Stephenson in his Lancashire brogue, "it would be soa much t' worse for t' coo!"

Mothers, God bless them! know better and have always known better. With the beautiful instinct of maternity that, though we sometimes deprecate it in our superior way as irrational and

even regrettable, we cannot help admiring, it is the unusual child in the family who has always come in for the greatest dower and heritage of affection and of tender care. Whether the exceptionalness be plus or minus, so to speak, the little one endowed with rare and special gifts or pitiably deficient in some of his senses and powers, the result has been ever the same — the weakliest child is the best beloved and receives the warmest affection. And this singular sentiment, which has been so often commented on and even stigmatized as unjust and morbid, is now found to be abundantly justified. First, because normal children will to a large extent, if given kindly treatment and good surroundings, grow up of themselves and become pretty much what they are born to be, regardless of punishments and scoldings and so-called instruction. Second, because many of these ugly ducklings, so dear to the mother's heart, will turn out, when finally they have reached the full zenith of their powers, which may take longer than the shorter flight of the average child, birds of rarest plumage or brilliant song.

On the other hand, though those children born normal will grow and develop healthfully and normally — I had almost said inevitably and irrepressibly — under the ordinary favourable environment, those who are born abnormal by defect have little or no such tendency. Without

special and expert care and attention they may remain practically as childish and as incapable of caring for themselves at fifteen as at five; but, by proper special training and care, two thirds of them may be caused to develop fairly normally up to the fifteen-year level; which means that they are capable of supporting and caring for themselves and, to a reasonable degree, of enjoying life.

Don't on any account neglect the average "common or garden" child. He is well worth all the time and care you can spend on him; but put your ablest intellects, your divinest patiences, at work on the problem of the exceptional — yes, even of the abnormal — child; for among those brambles and tares you will reap some of the finest and most perfect of the wheat. Havelock Ellis for instance, found in his brilliant Study of British Genius that no less than fifteen per cent. of the great men of English history were recorded by their biographers as "of notably feeble physical constitution" in childhood.

It is when we find ourselves confronted with one of these problem children, one of these frail, quaint, dreamy, hyper-sensitive little beings, who "lacks stamina," who has no desire to eat with both hands and the whole surface of his face back to his ears, and, in Choate's quaint phrase, "has no constitution to speak of, but is living under the by-laws," that

we really have to call our brains into play and show what stuff we are made of.

We have a somewhat curious idea of what constitutes strength or a good constitution in a child. In itself, of course, the strongest and sturdiest baby is a tiny, feeble, puny creature. The secret of its strength, the trick of its success in life, consists in its ability to absorb energy from its environment and turn it to its own use. A baby is simply a sponge in mannikin form, capable of sucking up the sun power of the universe and turning it into growth, action and thought. How far that process of suction will go, how complete will be its success, is as impossible to prophesy, during infancy or early childhood, as it is to tell what kind of a crop a young apple tree is going to bear from inspecting it when it is eighteen inches high.

A great many so-called delicate children are so only in appearance and have really exceedingly good and enduring constitutions, but they have difficulty in getting the first beginnings of this suction process properly established. That's what maternal love was invented for and where the new doctor comes in. We used to have the idea, even in the medical profession, that children were born either with or without a definite something known as "a good constitution"; and that, if they did not have it it was hardly worth while trying to raise them. Our attitude was about as rational as that

of the dear old lady of ninety who, on receiving the announcement of the death of her eldest son at the age of seventy-two, ejaculated: "Dear, dear, dear! I always told Josiah we never would be able to raise that child."

Many and many a delicate child, if he can be steered and nursed and coaxed through the stormy first period of adjustment to his environment, grows up into a vigorous, able, long-lived man or woman. One of the most desirable faculties in catching and drinking in the sun power is quick, active response to all the influences that come from the environment. In the average elastic, happy-go-lucky, thick-skinned youngster, this response is just keen enough to serve its purpose and never becomes overmasteringly powerful; but in the delicate child the response to certain kinds of stimuli is so intense, so vivid and overwhelming, that it throws him off his balance and prevents his proper reaction to other messages. He is so fascinated by books and make-believe and pictures that he forgets to eat. His memories of what he has seen and heard are so vivid and overmastering that he cannot get to sleep at night, or his dreams rob his slumbers of their proper refreshment.

Just keep that young dreamer firmly in contact with mother earth for ten or fifteen years by playing in the dirt nine hours of the day, eating for three and sleeping the other twelve; use all

your ingenuity to make his food more interesting to him than his books and pictures — and out of the same stuff of which his dreams are made he will build great buildings, carve out a fortune for himself, paint pictures to gladden the world, and win new discoveries in science or inventions in industry. Many a so-called delicate child is delicate simply because he needs hatching, not merely for the customary period, but from nine to nineteen years longer.

There are, of course a certain number of abnormal children who — poor innocents — are abnormal by reason of some form of definite physical or mental defect; but they are happily a very small minority. The best and most careful estimates now find barely one half of one per cent. of all children in such state. The overwhelming probability is that the delicate or, as we now sometimes term it the atypical child is so on account of some lack of proper adjustment, either delayed or precocious, to the ordinary environment; and our problem as parents, physicians and teachers is diligently to hunt for the point or points of maladjustment and correct them. The more experience we have, the more the wonder grows at the cheering and admirable results that may be obtained from even the most apparently unpromising material by patient intelligence and unwearying kindness.

The delightful difference between a child and a machine is that, the moment you find and remove one point of maladjustment, you start an upward and improving impulse which runs through the whole circle of its activities. You remove adenoids, for instance, and improve the child's hearing; thereby you promptly release him from the false reproach of stupidity, or even disobedience, because he can't hear what's said to him, and he regains his place in his classes — his self-respect. He is no longer kept in after school — and thus gets his full play-time; his appetite is improved, his sleep is better and he is started toward a higher level all along the line. Straighten his crooked teeth or fill the decaying ones and you improve both his appetite and his digestion; you increase his weight, increase his vigour and power of attention both in the schoolroom and outdoors; increase his resisting power to the colds and sore throats and stomach troubles, whose germs are perpetually wandering about seeking whom they may devour — and your ailing, backward, cold-catching child is improved twenty-five per cent.

Some delicate children are weakly and deficient in vigour on account of the sins, voluntary or involuntary, of their parents. If the mother has been underfed or overworked during that wondrous sacred period of the creation of a new life, when every energy and every power that she possesses

ought to be bent and turned solely to this one great end, her child is liable to be born weakly and to die, within the first few months or years, of either what we politely and pompously term "inanition" or "marasmus," both of which really mean that the child was starved to death before it was born, if the Hibernicism be pardoned.

Nature is far more careful of the new life than of the old. If there is any nourishment to be had the baby will get it from the mother and grow like a parasite within her body at her expense; but she cannot work miracles and, in spite of all her favoritism, from one third to two fifths of the deaths that occur during the first year of life among the children of our labouring and manufacturing classes are due to this form of prenatal starvation. The best way to feed the child, not merely during its period of prenatal life but also during its first year of mundane existence, is through the mother. An effective way of preventing one class — and not a small one — of delicate children would be by a formal endowment of maternity, securing to every prospective mother, in whatever rank of life the best and most abundant of food, the wholesomest of surroundings and the completest of rest; and no other money spent by the State would pay such an abundant return on the investment.

Another cause of delicacy in childhood, not a very common one but sadly far from rare, is the

Plague of the First-born. This setting of the children's teeth on edge because the fathers have eaten sour grapes may crop up in every grade of society and, thanks to our idiotic and ostrich-like policy of concealment of the all-important facts about it, in homes of the purest morality and highest refinement; in fact, it is the peculiar blight of royal families and aristocracies, and is a possibility for which we should always be on the sharpest and keenest lookout from the earliest week of life. Not more than one innocent babe in two hundred is born doomed by this plague, but the transformation that is wrought by a few grains of God's second greatest remedial gift to man, mercury, is little short of magical, changing the snuffling, pasty-faced, ailing, wrinkled-skinned baby into a plump, comfortable, pink-and-white youngster — to say nothing of preventing him from growing up stunted, blear-eyed, broken-toothed, with the arteries and nervous system of an old, old man. Any baby with a reasonable or even the faintest suggestion of this taint should be given the benefit of the doubt and a course of the remedy, no matter what the social and moral standing of either or both parents.

It is a mercifully fortunate coincidence that the only common disease in which the iniquities of the fathers are visited directly upon the children is the one for which we have the surest specific

cure. Thanks to mercury, even the infant so tainted has a fair chance to "break even."

For the most part, in dealing with the delicate or unusual child, the bugaboo of heredity need not very seriously disturb us. Complex and wondrous and conceited as we are, we are little but carriers for the germ plasm, lanterns to protect from the ruder gusts of circumstance the torch of the life of the race within us. Very, very few acquired characteristics are transmitted; and almost the only way in which we can possibly affect the next generation is either to starve or poison by the toxins of infectious disease, or by external poisons like alcohol or lead, the blood which nourishes the germ cells within our bodies.

If you have avoided chronic starvation, alcohol to the point of saturation, and the race plague, you may face the future of your children with a conscience fairly clear of misgivings as to any handicaps they may have inherited from you. So unbroken has been the continuity of the germ plasm, so little affected is it by the series of bodies, the successive temples in which its light has been shrined, that ninety per cent. of the characteristics of your child date back at least to the Norman conquest or the wars of Charlemagne; and your personal contribution to or influence upon his heredity is probably less than five per cent., which is a humiliating but perhaps a consoling reflection.

The few hereditary diseases which survive — such as epilepsy, certain forms of insanity, sick headache, and possibly alcoholism — are now regarded rather as unbalanced or defective states of certain parts of the nervous system that render them liable to break down or to react unfavorably under ordinary strains, but are eight times out of ten capable of being trained and fed into normal vigor and resisting power, rather than as specific tendencies toward the development of any special form of vice or defect. Under ordinary surroundings, half of the offspring of even the drunkard or the epileptic will probably grow up normal, unless he has mated with another victim of his own defect. So that, in the overwhelming majority of cases, the future of your child lies almost absolutely in your own hands, with odds of twenty to one in favour of his growing up normal and wholesome and vigorous, if you only avoid doing anything positively injurious or obstructive.

Don't worry about your gout, or your neurasthenia, or your New England conscience, or your quick temper; your child will probably never know there is such a thing — unless you give him too many illustrations and examples.

It is really surprising how large a share of so-called delicacy and backwardness in children is due to a perfectly preventable group of causes — namely, the acute infectious diseases. Exceedingly

few children, for instance, are born deaf or dumb, or with defective sight, and very few either crippled or deformed. Ninety per cent. of these conditions are emphatically acquired; in other words, a cripple, a blind child, a hunchback, a deaf-mute, is nine times out of ten a manufactured product and it is perfectly possible to stop this branch of the manufacturing industry.

The little fevers of infancy, the diseases of childhood, are by no means the trifling and unimportant things which we were at one time inclined to regard them. Their death-rate, though low, totals nearly fifty thousand deaths a year in the United States alone; and, though this is bad enough, we are becoming more and more convinced that their most serious effect upon the race is the scars and the marks and the damages that they leave upon the survivors. Many and many a case of delicacy and feebleness and lack of thrift and vigour is due to the mark left upon the little sufferer's kidneys, or heart, or liver, or nervous system by an imperfect recovery from an attack of one of these trifling disorders. Eight tenths of all our so-called chronic degenerations of the kidneys, heart, bloodvessels, liver, and nervous system are now attributed chiefly to after effects of one of these acute infections, either in infancy or childhood or in early adult life.

Fortunately one simple method is the best known

preventive and the nearest thing to a certain cure for these after effects and "hangovers"; and that is complete and absolute rest during the period of convalescence and until full recovery, not merely of the former weight but of normal vigour and bounce and elasticity, has occurred. Keep your child at home from school, keep him from engaging in the more violent competitive plays, keep him out-of-doors, and, if possible, send him to the country for four, eight or twelve weeks after an attack of measles, of scarlet fever, of diphtheria, of whooping-cough, of mumps — yes, even of tonsilitis and of a severe cold, which is an infection like the others and probably permanently damages as many kidneys, nervous systems and hearts as any one of them — and you will have taken a long step toward warding off the risk of a childhood of invalidism and of an early decay of his arteries or his nervous system. Give Nature all the time she wants and every possible advantage in the way of surroundings, so that she can make a complete and permanent cure, and you will have wiped out one of the commonest causes of invalidism in later life.

The same may be said in regard to the prevention and cure of most forms of crippling in childhood; in fact, one of the most cheering results of modern medicine is the extent to which, even in the slums of our largest cities, crippled, hunchbacked, club-

footed, bow-legged children have almost disappeared. If medical science had done nothing else for humanity this would have well repaid all the time and labour that have been expended upon it. It practically has come to the point that there is no excuse for a child's being or remaining crippled or deformed, save in a few of the rarest and severest congenital defects or after prolonged and desperate suppurating disease or crushing and maiming accidents. All cases of clubfoot, for instance, if taken in hand promptly and intelligently, may be cured so that the child has a thoroughly useful and in most cases a perfect foot; and this, too, often without even needing to use the knife.

Nine tenths of all cases of hunchback are due to tuberculosis of the bones of the spinal column. Eight tenths of all cases of hip-joint disease and a large share of all crippling inflammations and abscesses in bones and joints all over the body are due to the same cause. Many cases of wasting diarrhœa — particularly those with a protuberant abdomen — and a large majority of suppurating glands, or "kernels," in the neck, throat and armpit, are due to either tubercle or the pus-forming germs of wound infections, besides many backward and wasting and under-nourished conditions in children, for which it is difficult to discover any positive cause.

Wipe out the great white plague alone, as is

perfectly practicable, by preventing the spread of its contagion from advanced cases to others in the same household and family with them; send all children found or even suspected to be affected with it out into the country for a course in Nature's great hospital, the open air—and you will within a single generation have wiped out of existence all this pitiful army of cripples and hunchbacks and scarred and stunted and wasted children.

When we further remember that from ten to thirty per cent. of all cases of blindness are due to one infectious disease, the contagion of which gets into the eyes of the child at birth; that another large share of the inmates of our blind asylums, and a still larger of those in schools for the deaf and dumb, are there on account of a preventable disease, cerebro-spinal meningitis; that a considerable proportion of the lamings and paralyses of childhood are due to another preventable infection for which science is just now beginning to find a cure, infantile paralysis — it can be seen what a tremendous amount of torturing disability and pitiful handicappings and cripplings of innocent children is going to be swept out of existence when science, with the assistance of an intelligent public, gets these infectious diseases under control. That day is already in sight, thanks to the patient, self-sacrificing, devoted labours of our world army

of laboratory workers — the real working priests or lay brothers of the religion of the future.

Another field of wondrous promise in the building up of weakly and delicate children is only just beginning to open up and can barely be touched upon here — that is, the succession of discoveries which we are steadily making as to the influence upon growth and health exercised by certain structures of the body known as the ductless glands, from the fact that they have no open duct or discharge-tube emptying into any of the body cavities, but pass their secretions directly into the blood-vessels which surround them. One of the best known of these is the thyroid gland, which has already been found capable of transforming a certain form of dwarf idiot, known as a cretin and very common in certain mountainous districts of Europe and Asia, into a fairly intelligent, well-grown, self-supporting, useful and happy member of society. His condition is due to a disease of the thyroid gland which destroys its function, and may be overcome by feeding the unfortunate child with the dried extract of the thyroid gland of a sheep.

Another ductless gland, the suprarenal gland, is just beginning to be understood and found to have a marked effect upon the development of the heart and bloodvessels, and also incidentally of the lungs and liver; and, in properly selected cases,

it acts as a powerful stimulus to development and a tonic to the proper action of these important organs.

Last, and least understood of all, is a tiny little gland at the base and centre of the brain, directly above the top of the roof of the mouth, known as the pituitary body, whose over-development is found to produce — if occurring in young life — giantism or abnormal stature, which is, nine times out of ten, a diseased condition and not a desirable state at all — or, in later life, a singular and grotesque overgrowth of the hands, the feet, the jaws and the arches of bone over the eyes, known as acromegaly, which makes the unfortunate victim look like a caricature of his former self.

The pituitary body is also correspondingly shrunk and atrophied in a large class of dwarfs. Though little is definitely settled in regard to it as yet, the pituitary is now beginning to be rated as a sort of growth-regulating centre for the entire body, a view that was suggested by the writer nearly fifteen years ago. Several investigators of high repute have expressed the hope that we shall be able, by the administration of its extract, to control certain abnormalities of growth and development, in a most helpful and interesting way.

Far the most frequent trouble of the delicate child is inability to adjust himself automatically to average or ordinary surroundings. And by one

of those unfortunate vicious circles which occasionally occur in our mental processes we are too apt to think that because the symptoms of this maladjustment are nervous, mental or temperamental, they must be combated by mental, moral or disciplinary measures. Our children literally ask bread and we give them a stone — argument, exhortation and "appeals to their better nature" — when what they really need is half an inch of butter on their bread and an hour's extra sleep in the morning. The less we treat the mental and emotional peculiarities of our children by mental and emotional means the better success we shall have in dealing with them.

It should never be forgotten that childhood is, above all things, a period of storage of surplus, of charging the body batteries not merely for the day or the month but for the threescore years and ten that are to follow. All the processes of intake are and ought to be at their fullest and highest tide. It is hardly possible to induce a healthy child to take too much sound, rich, nourishing food or too much sleep. It is easily possible to let him undereat, or to let him stay awake too long, or overwork, or overplay. A growing child should have all the food, all the rest and all the sunshine and fresh air he can possibly utilize — and then some more to grow on and store up for future use. The young robin in the nest eats its

own weight of food in one summer day; whenever its beak is not wide agape it is asleep — and the human nestling is strikingly like unto it. Even to threescore years we do most of our growing while we are asleep; and are either eating or earning our meal tickets most of the time that we are awake.

Of all the parts of the child's body which are growing — not only for the present but for the future as well — which are piling up capital in advance for lifelong use, the nervous system and the brain are the most forehanded. The child's brain at birth is already over one half its adult size and attains eight tenths of its full bulk by seven years of age. The only important way in which you can contribute to the vigour of a child's brain and the stability of his nervous system up to seven years of age is by feeding him; and the most important and vital way of developing his mind for the next seven years is by giving him full opportunity to exercise his senses and his muscles in play outdoors.

What his ultimate mental stature will be is, like his bodily, Nature's affair — not ours. Here is where much of our trouble with the delicate child begins. We don't trust Nature. We have no patience with the slowness with which she is building up that large brain, that wondrously complex and sensitive nervous system or that vivid temperament. Because the child's mind

or nervous system shows already signs of unusually quick response we think here is a mind worth cultivating and forcing, and proceed to increase the already abnormal vigour of his mental vibrations, without noticing that we are at the same time throwing his liver and digestion and muscles further out of gear.

We are perpetually pulling up the child's nervous system by the roots to see if it is growing properly. We do everything to stimulate just that part of the child's nature that ought to be wet-blanketed and slowed down. The nervous system is absolute king of the body, in the sense that it will get the best of everything that is going; and there is not the slightest danger of overbuilding the body or overpampering the appetite or overencouraging the indolence of the delicate child who has a top-heavy brain. Everything that he eats will turn to brain.

Our ideas of what we can do directly to promote brain growth and mental development are almost as absurd as the theory gravely advanced not half a century ago that a moderate degree of hydrocephalus — "water on the brain" — in early childhood was of advantage, because it expanded the bones of the skull and gave the brain room to grow — the only basis for the precious theory being that the heads in childhood of a certain number of exceptionally able and brilliant men

were so large, on account of their precociously developed brains, as to appear almost hydrocephalic.

The first requisites, then, for the building up of the delicate child are an abundance of food and an abundance of sleep, and I hardly know which of the two requirements to place first. There is no question that a large share of the success of our modern treatment of tuberculosis is due to the absolute rest insisted upon in the open air. In fact, food, open air and rest form the great trinity of factors in the cure. The nearer you can come to inducing a child to spend half of his time in sleep up to ten years of age, the better that child will grow; and this is doubly true of the delicate child. What he needs above all things is time for adjustment. He is one of the illustrations of Rousseau's profound though erratic wisdom, when the philosopher declared that, in education and growth, "*Il est le temps qu'on perd qu'on gagne*" — "It is the time that we lose which we gain." Have no fear but that your child will "arrive" ninety-nine times out of a hundred; give him all the time he wants. We admit, with owl-like approval, that we cannot put old heads on young shoulders; and yet that is precisely what two thirds of our mental and moral training of children attempts. The child's sleep, of course, should always be in the open air or in a breeze between open windows;

and he should get at least five hours of sunlight every day, when this is available.

The same general principles should apply in regard to his feeding. Don't be afraid to follow even his whims and his cravings — in the beginning at least — until you get him well started in the habit of wanting to devour things. Indeed, nine times out of ten these whims and fancies of his will be sounder than what has been shrewdly termed "that ponderous folly of the middle-aged which we call mature judgment." The larger his brain and the smaller his stomach, so to speak, the more concentrated will be the food that he demands. Many delicate children have a positive craving for butter. They will literally plaster it on their bread and eat, if allowed, a quarter of a pound a day; this the old régime sternly denied them, but offered them a tablespoonful a day of cod-liver oil or olive oil as a substitute! Let them have all the butter, all the cream and all the roasted almonds or pecans or English walnuts, in reason, that they want; let their bread be simply an excuse for butter and their mush for cream and sugar — and you will have started them on the first slope of the upgrade toward balance and vigour. Sugar is another real food and meat another; and, though both in excess may possibly have some undesirable after effects in adults, these have been greatly exaggerated, and the popular belief as to their unwholesomeness

for children is almost pure superstition and little more. Our habit of feeding children upon plain foods and inexpensive dishes is based on Puritanism and stinginess, equal parts. There are no cheap foods for children.

All healthy, growing young animals ought to have an outward and visible surplus, as well as an internal one, in the shape of a coating of fat. This is the invariable rule in the animal kingdom — plumpness and roundness and comfortableness are the marks of growing young things — and it has comparatively few exceptions in our own species. Broadly speaking, the child that is not comfortably plump is not normal, in the sense of getting all his possibilities of growth and development, and needs usually to have more meat, fat and sugar in his diet, and more sleep. If a child gorges himself into an attack of indigestion when turned loose on candy or cakes and cream, or in the jam closet, it is simply a sign that his diet has not been properly balanced and his abnormal craving is a mark of sugar starvation. Balance his diet properly with plenty of sugar and sweet things, and he may be trusted with an open candy box and the key of the jam closet.

If you once succeed in making your delicate child fat and plump, and know how to keep him so, you have solved three fourths of your problem; and time can be trusted to do the rest.

Above all things, avoid stimulating, or indeed paying any attention to that part of the delicate child that is already overdeveloped — his mind, his nervous system and his emotions. These are the very last children in the world who ought to be subjected to appeals to their better nature, to their reason and to their sense of the fear of consequences, or of pride, or rivalry. Feed them all you can induce them to eat, turn them out to play in the dirt, put them to sleep in the open air, and let their minds and their consciences and their moral natures go hang. A mind of some sort and a morality of some sort are just as essential to survival as a body, and will grow just as naturally and wholesomely from contact with environment. Keep children healthy and happy, set them a good example, answer a tenth or more of their questions; and, like Little Bopeep's sheep, you can safely leave them alone — and they'll come home with their mental and moral tails behind them.

With the exception of the fraction of a percentage, already alluded to, who are born mentally deficient or morally defective, ninety-nine per cent. of all perversities or queerness or little vices of children are things that they have either picked up from example or been driven into by fear.

Keep fear as absolutely as possible out of the environment of not only the delicate but also

the healthy child. For the first seven years of his life in this age of peace and safety, there is absolutely nothing for him to be afraid of or which the fear reflex will enable him to avoid, save such crude and rare dangers as falls from a window, or being run over in the street, or setting himself on fire; and he should grow up as nearly as possible without knowing the name of fear. There are no bogies who will "git him ef he don't watch out." There are no witches or demons, or things that lurk under the bed or in dark corners — there is not even an angry God, who has damned him in advance and whose accusing eye is relentlessly in every place; and it is little short of criminal to put such ideas as these into the minds of children, especially of those who are already of a nervous or emotional type.

It is not only wrong but shameful to tell an innocent child that some little mistake he may have made, or petty offence he has committed against the laws of the household, is wicked; for, he is as innocent of moral ideas as a kitten and should be kept so as long as possible. Fear and the sense of wrongdoing, and that moral biliousness — conviction of sin — will come soon enough; but let him at least start free and fearless and happy. Develop his sense of humour and repress and discourage abnormal conscientiousness of every sort. A diet even of Sunday Supplements will be whole-

somer for the sensitive child than one of Sunday school books and Bible stories.

One point of considerable practical importance, which often has to be considered in the care of the delicate or difficult child, is as to whether he needs a change of treatment or of scene and surroundings. Broadly considered, no environment has as yet been invented half so wholesome for a child as a good home. Very often, too, the changes that are needed to make that home ideal are changes in the personal attitude of the parents or other members of the family, which would be as wholesome and improving for them as for him. Occasionally a selfish father or nervous mother is the worst possible companion for the child, particularly because they both, so to speak, stick out at the same points and grate upon one another in proportion. On the other hand, such contact, if it can be kept within reasonable limits of friction, is the best possible education and discipline for both of them; and the education children give their parents is at least as important and valuable as that which parents give their children.

Petulantly to give up the problem and cut the Gordian knot by sending the troublesome boy or nervous girl away to school is simply cowardly shirking and evasion of our sacred duty as parents.

On the other hand, there is also the possibility, as Oliver Wendell Holmes humorously expressed

it, of "Smith smithing Smith into the insane asylum"; and an occasional change of air and a vacation from one another are excellent things for the members of even the most harmonious of families, from grandparents and grandchildren up to husbands and wives.

A helpful compromise between a series of perpetual jarring and of throwing up the hands and turning the youngster over completely to some professional childfarmer is the summer camp, or vacation home, for both boys and girls. Here the youngster can be given a chance actually to live and put into practice his daydreams, with paddle and moccasin and eagle feathers, and become for the summer a healthy, happy, unworried and brainless young animal. He can also be brought wholesomely and naturally into contact with youngsters of his own age, closely enough to rub the corners off and take the nonsense out of him — and yet under sufficiently kindly and intelligent supervision to prevent the outgrowth of those brutal little habits and disgusting mummeries and false codes of morals that boys of a certain age, if torn out of their natural home surroundings and forced to herd together in dormitories and within bounds, are almost certain to develop. Then we say that these results of our absurd and artificial system are the natural tendencies of that dreadful young savage, a boy. His absence is

just long enough to develop a good, healthy attack of homesickness and appreciation of his privileges and blessings in the family circle, and at the same time to give opportunity for the development of a similar mellowing process in the mental attitude of the members of his family at home toward him. When autumn comes he will be glad to get back and they will be glad to have him back; and both will be much more likely to do their best to get along with each other with the prospect of another pleasant vacation separation next year.

CHAPTER XV

FICTION AS A DIET

TO THE serious-minded the value of fiction as a diet would seem about equivalent to that of froth as food. They will assure us that we might as well endeavour to grow fat by snuffing up the east wind, like the Scriptural wild ass of the desert, as to build up either mental or bodily power upon a diet of fiction. But some of the apparently most useless things in the world are the most necessary to life. We cannot eat froth or digest the air that its bubbles contain, but nearly half the bulk of our most important single food, bread, the Staff of Life, is composed of it. A loaf is a bubble of flour froth and owes much of its digestibility and wholesomeness to the spongy porous form which its gas content gives it. Plants cannot eat air, yet one of the principal aims of scientific tillage is to keep the soil bed well stirred up so as to be porous and full of air down to the very tips of the roots of the crop, so that chemical and bacterial changes, without which no plant can live, can take place freely.

Food for the fancy may neither directly strengthen

the intellect nor enrich the memory, but neither of the latter can either grow or keep healthy without it, any more than other living things can without the sunshine and fresh air — those most ethereal and unsubstantial of things.

It is often the trivial things that really matter. Man is emphatically made all in one piece: body, soul, and spirit, will, intellect, and imagination, and if you starve one of his demands, you cheat all. As porridge without salt, yes, as a gun without flint or percussion cap, would be life without imagination. A dwarfed and starved imagination is almost as bad for the health and future efficiency of its possessor as a crooked spine. One of the gravest obstacles that we find in our hygienic campaigns is the difficulty of getting people to imagine and believe in the possibility of some improvement in the conditions which they have been accustomed to, and in the habits in which they have been bred. The causes of improvement in health and happiness are physical and material, enough, good food, better wages, pure water, pure air. But to get these the first and most practically fundamental task is to quicken popular imagination, make it capable of picturing something better and of realizing the faults of the present and the past. It has long been a classic lament of moralists that the two things which the mass of humanity was most determined to have, were *panem et circenses*

(bread and games). And the fact that they will often put up with a pretty slender amount of doubtful quality of bread, if they could get plenty of games, has been shrewdly used for his own advantage by the tyrant and exploiter in every age. But their instinct was perfectly sound. "Man cannot live by bread alone, but by every word that proceeded out of the mouth of God," certainly included legend and song and story and the drama and the pomp of great festivals and rejoicings, unless there be many things in this world which were not created by the Almighty.

We have all heard and echoed mechanically that the imagination is the noblest gift of man, but we do not adequately realize what a tremendously vital, practical, fundamental part it plays in the welfare and progress of mankind. The moment you start to improve upon anything, you must use your imagination. Of course we recognize at once that the great inventor, the discoverer of some new and far-reaching truth, must have a "wonderful imagination"; but we do not see so clearly that no one can build a house or shoe a horse, or dig a ditch, or cook a dinner, or make a dress decently and creditably without using the imagination. The man who has no imagination is a failure as a craftsman; the woman who has no imagination makes a mess of her housekeeping simply because no two tasks or no two conditions are

ever precisely alike, and the one who clings mechanically to the old routine, the ancient rule of thumb without ability to see where it not only can, but must, be modified will score the largest and most serious percentage of failures in the long run. In the language of biology, he cannot adjust himself to his environment and hence cannot survive.

One of the most extraordinary things about our amazing system of education is that, while it concentrates its gravest and most ponderous attention upon the memory, the reason and the intellect, it leaves the cultivation of the imagination largely to chance. The stories which the child hears in the home and on the streets, the romantic and highly improbable accounts of his own adventures which he constructs and recites to his fellows, the dime novels and the penny-dreadful, the stories of Indians and pirates and detectives that he smuggles into his desk and under his pillow — these are the only food which the worshippers of the Three R's provide for the development of his noblest faculty. What wonder that he gulps them down with ravenous indiscrimination as a thirsty child would muddy water, or a starving one half-cooked food. The very eagerness of his craving for fiction shows its vital importance to him. The greatest possible service of education, and one which it practically does not perform at present, is to train a child to grasp and master a situation and adjust

himself to it. But he cannot possibly do this without a constructive use of his imagination. Any food however coarse or rank which will start him to thinking for himself, to imagine new possibilities, to dream of better things will do him a more priceless service than any amount of mechanical drilling or cramming of his memory. Information, no matter how useful or important, is of no value until it has been digested, and the only faculty of the mind which contains any pepsin is the imagination.

From the point of view of bodily health as well as mental efficiency, you might as well let your liver go to sleep as your imagination. Only get a child or a man to read and enjoy reading, and form the habit of it, and you have taken the longest single step toward leading him to think and to act for himself. This is why the powers that be, whether temporal or ecclesiastic, have usually opposed education save when they could turn it into channels which would be harmless to themselves and have always opposed the printing press and the newspaper because they never could control them. Not a little of the still surviving denunciation of "trashy fiction," and the "sensational press" is a survivor of this attitude of mind. It makes comparatively little difference *what* a child or a class reads to begin with; the main thing is to form the habit, and his instincts can be trusted

steadily to lead him to something better. A stolid, impenetrable, pachydermatous imagination is the greatest foe of progress and enemy of human welfare. Any means which cultivates and stimulates it within reasonable limits will cultivate and enlarge every other faculty of the human mind and body as well.

Give a man a lively imagination and a keen sense of humour and you have provided him with the best possible antidote against mental dry-rot and its second cousins, indolence and prejudice. A stunted, diseased imagination is the mother of delusions; and the best cure for them is not merely more intelligence, but a broader and more powerful imagination. A sound and vigorous imagination, instead of proving a cause of rash action and unsound judgment, is one of the best possible mental balance-wheels. The child or the man with a dwarfed imagination is robbed of one of his most priceless birthrights. It is of course a truism that it is the only creative faculty of the mind and the one whose exercise gives us the greatest and the purest pleasure. Food for the imagination is just as necessary as food for the intellect or food for the stomach. No man whose imagination is warped is going to live healthfully and happily, either mentally, physically or morally.

It is not a question of whether we will feed this faculty of ours or not, but simply on what and

how it will feed itself, and if it cannot get wholesome food it will eat garbage. But primarily and fundamentally it prefers sound food, and nothing but the absence of it will drive it to devour trash and offal.

Happily in childhood Nature provides food for the imagination in such profusion that all our stupidity and perversity can scarcely succeed in starving the flame. The glory in the grass, the wonder in the flower, the light that never was on sea or land, touches and gilds the smallest and commonest of everyday things about us. No matter whether the things themselves are attractive, or even useful or not, their mere existence is gilded by the magic of our childish vision until it becomes a source of pleasure in itself. As Stevenson, with that wondrous insight into the very heart of the child mind, sang:

> The world is so full of a number of things,
> I'm sure we should all be as happy as kings.

And, heaven be praised, we are unless some "grown-up" positively goes out of his way, whether by endeavour or neglect, or scarcely less often by well-meant interference and instruction, to prevent it! His delight in myth and legend and fairy tale, which is just beginning to be recognized even by educators is nature's royal road to learning, wondrous romances which he will construct either

of his own adventures, presumably in some previous incarnation, or of the habits and doings of some imaginary friends and playmates of his who come to him in the dusk! His vivid transformation of a walking-stick into a prancing charger, of a couple of chairs on the nursery floor into the Flying Dutchman, and fat old Fido into any kind of ravenous beast required by the artistic necessities of the situation, from a Jabberwock to a "pole bearer," all show his power of developing his highest single faculty — that of putting two things together and out of them creating a new and different third.

Even here his unspoiled taste is sound. He would rather have stories of birds and butterflies and flowers and grass and trees, of sun and wind than stories of ghosts and demons and gods and goddesses. Give him plenty of happy, breezy, wholesome and intrinsically true stories of the living world about him, and he will not crave, in fact will be positively repelled by, those morbid echoes of jealousy, murder and lust which play so large a part in myth and legend and folk-story and Old Testament story.

While many of these myths and legends are of the keenest interest and enjoyment to the child, I frankly confess that I cannot help feeling that their indiscriminate use can easily become a source of harm and that they should be most carefully selected and modernized for the use of the child.

Most of them are tinged with that profound melancholy of the earlier ages of mankind which still exists in savages. Man is but a pigmy and the sport of swarms of higher powers, some friendly but more of them malignant, all mischievous and uncertain. The one secret of success, the highest achievement, is not boldly to face and conquer Fate, but to cringe before her, to secure the favour of some god by some act however disreputable, or dishonourable, to get control of some word of power, some trick, some magical secret, some invincible sword. The game of life is never to be played openly, but always with loaded dice, and the man or woman who succeeds is the one who is most craftily successful in winning the favour of the most powerful of the generally disreputable powers that be, whether God, Djinn, or Wizard. A large minority of these myths and stories, whether Greek, Norse or Hebrew, are unfit to be told to a clean-minded child, and another considerable percentage of them are so utterly unjust and unfair as to shock his native sense of right and justice. The story of Hector and Achilles for instance, of Esau and Jacob, or of Baldur and Loki take an immense amount of decidedly sophisticated explanation and befogging before he can be induced to regard them as fair or even decent.

I can conceive of no better means of riveting

in his mind the firm conviction that trickery will always vanquish honesty, favouritism conquer merit, and error be stronger than truth than an indiscriminate course of these tales and stories.

But when the magic carpet of reading is placed at his command, his immediate surroundings become too limited, too prosaic, and he begins to fly hither and thither, sitting cross-legged upon it to the uppermost parts of the earth; he sails the Spanish Main, leaps over reeking bulwarks and steps over stones slippery with blood, with his bosom friends and ideals, the pirates.

They are not usually men "of much moral principle," as Mr. A. Ward apologetically remarks, but they are not a pin worse, even in the yellowest of the yellow-backs, than the gentlemen adventurers of the sixteenth century, and they are three whole grades in the rogue's gallery above any god or goddess yet invented. The same is true of the Boy Outlaw and the Terror of the Everglades. The heart of these swashbuckling heroes is always in the right place, even if their heads and heels indulge in some strange capers. The desperado who is the bravest, the most generous, the most faithful to his friends and most magnanimous to his enemies, the most chivalrous to women and the kindest to the poor is the one who emerges triumphant in the long run, eight times out of ten.

No less romantic and less vivid are the imaginings

of the mind of the girl, but her fancy takes a gentler and softer turn. The dignities and delights of housekeeping and of home making, the care of wondrously beautiful and brilliant children, the charm of diamonds and silk dresses and beautiful carriages and princely romances. Later the discovery, the wondrous revelation of the prince beautiful, with the raven locks and the marble brow and the soulful, piercing eyes. He will probably have a snub nose and freckles and hair like a shoe-brush when he comes, but he will be the prince beautiful just the same. It is not too much to say that a boy's ideals, his standards, his notions of what success really consists in and what is best worth while, his attitude toward women, his attitude toward the nation and the race is as largely moulded and determined by the fiction that he reads and delights in as by any other single factor.

The same is equally true of the girl and her ideals. They both *will* dream dreams and build castles in the air, and construct their ideals out of some sort of material. The question is, What kind of raw material are you furnishing for the fabric of these visions? or are you letting them go out into the highways and hedges and glean for themselves? It is as cruel and as injurious to deprive a growing boy or a budding girl of an abundance of sound, wholesome, enjoyable fiction as it is to debar them from butter on their bread and sugar on their

porridge. It is best, of course, to provide this supply of imagination food from real life. There are plenty of real flesh and blood heroes both in the past and round about us in the present, much superior to any demigod or saint, but just as the great artist does not merely hold the mirror up to nature, but holds it in such a way as to make his picture not only literal truth but the emblem of the eternal verities as well, so the gifted word painter can draw a figure or tell a story which in the strictest sense is truer even and more convincing than the precisest and most strictly accurate recital of any single individual fact.

We love the characters in the novel as we seldom do people in real life, because the artist has enabled us to recognize in them the eternal and never-dying triumphs and failures, loves and hates, hopes and fears of humanity. This is why, while we are often fearfully bored by even our best friends, if we see too much of them, we never lose interest in Colonel Newcombe, Tristram Shandy, Jeanie Deans, Mr. Pickwick, Leather Stocking, Sir John Falstaff and Becky Sharp.

In the early days when reading and writing were gifts to marvel at, this love of the adventure, of the new, of the more beautiful, finding, alas! often too little to feed upon in its immediate surroundings, could be gratified only through the arts of the story teller, the minnesinger and the bard.

And there is no more lucrative, influential profession, over something like two thirds of the earth's surface still to-day, than that of the man who has the gift of living and convincing story telling.

As the story teller began to heighten his effects first by intonation and by gesture — pantomime — the calling in of the accessories for dialogue and combat, the use of backgrounds, costumes and scenic effects, the second great food of the imagination, the drama, developed. This still holds, and deservedly, all over the face of the earth in every possible stage of culture and civilization, a high and unshakable place in the affection and the regard of the human race. For vigour of appeal, for electric stimulation and vivifying of the emotions and fancy, it still holds the highest place. Bold and even at times shameless as it is in depicting life exactly as it exists, and from all possible points of view with both the varnish left off and the cant left out, the net result of its influence is overwhelmingly stimulating, invigorating and elevating. It makes men and women think and feel with others and for others in spite of themselves. It develops sympathy and helpfulness, it takes the individual out of himself and the rut in which he is living; it enables him to see, above the smoke and grime of the market place, the beauty of the great fiery virtues — courage, devotion, honour, vitality, friendship and patriotism.

While some of its displays of vice and headstrong passion and lawlessness are temporarily attractive, and its allusions to gilded frailties too suggestive and apologetic at times, its ultimate ethics are overwhelmingly sound and its morality, indeed, abjectly and almost absurdly Sunday-school-like in its propriety and conventionality. Its villain may be an accomplished person of wondrous address with sword, or pistol, or tongue, or all three, and may in the first and second acts triumph over and inflict all sorts of bodily and mental agonies upon his innocent victims, but he is hall-marked from the moment of his entry by his scowl, or his sneer. His villainy is so plainly stamped all over him that anywhere, outside of stage-land, he would be arrested at sight, or mobbed on the street; he is hissed by the gallery at his every appearance, and he is nine times out of ten utterly foiled or confounded in the long run and driven out into the darkness of an undying remorse, if he escapes being perforated, split, or blown up on the spot. The impossibly noble and pulp-headed hero and the incredibly virtuous and brainless heroine triumph victoriously in the end, their virtue alone, by sheer mass play, being able to overcome the obvious defects in their intelligences. The net influence of the stage has been overwhelmingly moral and wholesome, ever since it got rid of gods and goddesses with their injustices, their petty

jealousies and perpetual interference in affairs as *dramatis personæ.*

But the stage, vivid and stimulating as it was, still was lacking in breadth and universality of appeal, and in pure and unspoiled human interest. No theatre or amphitheatre, however large, will contain at one time more than a few thousands of the population of the nation or government by which it is supported; no drama or spectacle, however frequently repeated, could hope to be witnessed by and to reach more than a small per cent. of the people. It remained for the invention of man's greatest instrument of triumph over ignorance, prejudice, conservatism and injustice — the printing press — to render possible the highest, fairest and most democratic means for the cultivation of the imagination — the novel.

The novel is nothing more than the story turned into visible form by the black magic of the printer's art and spread before the eyes of tens of thousands of readers in place of recited by word of mouth in the hearing of tens or scores; or the drama, spread upon the printed page, and witnessed in the stage setting of their own minds by millions of readers, instead of hundreds of spectators. But there is a difference and a striking one. The novel has risen to a distinctly higher plane and clearer atmosphere than the story or drama, by improving the justice and the life truthfulness of its con-

ventions, by making the rules of the game fairer and more humane. It has got rid of at least two hampering and indeed demoralizing postulates and influences, the hereditary hero and the patron god or goddess.

A large percentage of even the most deathless legends and stories of the heroic age are absolutely repulsive to our modern sense of fairness and decency. What would we think of a soldier of to-day who would rush into battle and perform prodigies of valour and skill upon his foes, knowing himself to be in some magic armour which was both bullet-proof and sword-proof, like Achilles at the Siege of Troy? To our modern eye, Achilles, far from being a hero, is a sulky, ill-conditioned cur and richly deserved the disgraceful and ignominious fate which he inflicted upon the modest, brave, loving and manly Hector. Achilles was infinitely the smaller man of the two physically, mentally and morally, but happened to be the favourite of the powers higher up and Hector didn't; hence the inevitable result. In the whole of the "Iliads" and "Odysseys" there is scarcely a single hero who stands fairly and squarely upon his own merits. He is simply a puppet in the hands of some spiteful goddess or disreputable god, and the one who has the strongest heavenly backer is the one who carries off the prize. At every stage in the story our interest is broken, our sense of fair play and decency

outraged by the interference of some contemptible Olympian, throwing a net of invisible cords over the head of one hero, so that his brave adversary could hammer him to death with perfect safety, swooping down in the form of an eagle upon the helmet of one *real* man who happened to get into the book, and picking at his eyes and blinding him with its wings in order to keep him from chastising, as he richly deserved, the cowardly pet of the goddess. The moment a god comes into the story, the human interest is broken and usually half the properties and the decencies as well.

Man's gods are usually worse than himself and the embodiment of his vices rather than his virtues. If any personage or power, however exalted, attempted to employ on the field of battle or even in a football game or a baseball match, or a prize fight, one tenth of the interference, the unfairness, trickery and favouritism which the gods of all the heroic legends habitually exercised and employed, they would be fairly swept out of existence by a storm of popular indignation and contempt. Such tricks are still resorted to, such interference practised in the lower world of business and politics, but it is the most wholesome sign of the times that they will no longer be tolerated in the purer atmosphere of the ideal world of the drama and the novel. Nor in that realm of human activity, managed by real men, war and athletic sports.

There are three great foods for the growth and fields for the training of the imagination: the story, whether spoken or sung, the drama and the novel. "These three, and the greatest of these is" the novel. It is the best food for fancy ever invented — the sanest, the most wholesome, the most accessible. The ethics and the morâle of the prize ring are superior to those of the stock exchange and the convention. In the novel all the favouritism and injustice of the legends and classic plays are changed; its characters are men and women of flesh and blood like ourselves. They start fairly and squarely from the scratch in the race, the game begins with all the cards on the table, face upmost. There are differences, of course, of station, of birth, of financial condition, of bodily and mental gifts among them; but these in all real literature are carefully stated and explained, so that the players are accurately handicapped by them and carry weight accordingly. The fact is brought out that every peculiarity has its compensation; every disadvantage, its corresponding advantage, and the two starters in the race are given places of advantage or disadvantage according to previous accomplisments; the two contestants for the love of the fair lady are weighed into the ring at as nearly as possible at the same avoirdupois. The manly beauty and vigour of the unspoiled child of the people are offset by the wealth and cunning of the dissipated slip of gentility who is his rival.

The game is played out under the open skies, man against man and woman against woman. The villain is not all black or the hero all white. Each has the defects of his virtues and each receives in the main, the legitimate returns upon such intelligence, courage and sincerity as he may possess. The conqueror does not throw him to the vultures afterward and sell his wife and children into slavery. Everything is done with fairness and decency and humanity. But the interest is not a whit less intense and absorbing, rather indeed the greater, because you recognize that it is a clean and honourable fight to the finish according to decent and well recognized rules, without favouritism, or interference from the gods or the fates, except in so far as they may have granted different hereditary endowments to the contestants. It is the spirit of the game that charms and holds you, not the ultimate result, but the feeling that you have witnessed a clean, genuine contest of skill and strength in which both have put forth their utmost powers, and both had a fair chance. No one would pay a penny to go and see the Podunck high school nine beaten by the Giants, or any other favourite of the gods; or any game in which there was a suspicion of a "frame up," but would cheerfully put down his last dollar to see a real fight for the championship between the Cubs and the Pirates.

The novel has developed advantages over the drama in duration of interest and wholesomeness in so far as it has got away from the Historical Personage and the foregone conclusion. Whenever a king or a general or a great statesman is introduced into a story, the tendency is almost irresistible to magnify him so as to dwarf all the other characters. Whatever he particularly wants, it is more or less preordained that he must have. And while certain liberties may be taken, with relatively minor incidents in his career, such as the ladies that he falls in love with, or the games of golf that he plays, yet in the main the majority of his adventures must conform to the rigid and unescapable facts of history. You cannot possibly send him to exile or degrade him to obscurity whenever the dramatic interests of the story demand it, as you could an imaginary character. The historical play and the historical novel alike are almost compelled to concern themselves either with comparatively trivial escapades in the life and prospects of a great person, or introduce him ponderously from time to time as a huge and cumbrous lay figure upon the stage and make the interest centre in the doing and adventures of the lesser personages of the story.

The modern novel then, whether the shilling shocker or the six-shilling three-decker, has many claims to be regarded as the broadest and most

democratic field and means for the cultivation of the highest powers of man that the world has yet seen. So far from making a man or a woman shallow and frivolous and frothy, it broadens his horizon, it deepens his sympathies, it kindles his imagination, it shows him the defects of the present, and the possible beauties and triumphs of the future. An abundance of novels are in our mental diet what plenty of fruit and fresh vegetables are in our physical one, not merely a source of legitimate and wholesome enjoyment, but most necessary to life, health and progress. They are the best and most accessible means of lifting us out of ourselves and the rut we have got into, calling away the blood from the overworked and overdriven areas of our brain and sending it coursing through the starved and under-exercised ones. Once we come under their magic spell, we have thrown off the livery and the bondage of our trade and our occupation and become just men and women again, living the life, thrilling with the joy, pulsating with the passions of the whole race. Pure, sound fiction does not need to have a moral or be instructive or conceal a sermon, but just to be a first-class story, keeping to the rules of the game, as wholesome for the mind and morals as sunshine is for the body.

The most restful thing for a tired brain and overwrought nervous system is, first a brisk, en-

joyable walk or a keen, eager game in the open air followed by a hundred pages or so of a good novel. You will sleep better, go back to your work next day fresher and better rested than if you had endeavoured to crowd your brain with additional information or instruction for practical use in your life work. Many stories, of course, of real life, of adventure, biography, of travel, of the newest achievements and discoveries in the wonder world of science, are as interesting, as fascinating and, in moderate doses, as refreshing as a novel or a good story; but most of them, however keen their interest and fascinating their appeal, are still adding additional fatigue poisons to the store already in your blood, while the novel is practically doing nothing but washing these out of the overworked areas of your brain. The very "brainlessness" of the novel is one of its greatest advantages, the fact that it can be read without effort, almost without recognition, that it carries you along on its flowing stream like a dead leaf on a river, is one of its strongest points from the point of view of health. If men oftener read until they forgot their troubles, there would not be half as much drinking for the same purpose. I regard it as one of the most useful rules of mental health to keep on hand constantly at least one good novel, no matter who it is by, or what it is about, so long as it tells a good story and paints things as they

really are. And at least once a day, preferably just before going to bed at night, plunge into it long enough to forget yourself and be unwilling to stop. It will make your sleep sounder, your brain clearer and your temper sweeter and saner than almost any other form of mental exercise that I know.

If you are tired a good novel will rest you; if you are worried, it will make you forget your worries and yourself; if you are sick, it is one of your best medicines. The man or woman who, in the sunset afterglow of life, can enjoy a good story has found the secret of perpetual youth.

CHAPTER XVI

OVERWORKED CHILDREN ON THE FARM AND IN THE SCHOOL

CHILD labour is as old as civilization. Indeed, in all but name, it is far older than civilization, for the child of the savage has to forage for himself and fight for his own food from the time he is able to crawl. In savagery, the child works for himself; in barbarism, for his parents; in civilization, for a factory. He simply changes taskmasters with the ages, and the sternest and most cruel of all was the first. More children die of starvation, disease, and neglect in the healthiest tribe of "noble savages" that now exists, than in the vilest slum of our factory towns under civilization. There is abundant ground for being ashamed of ourselves, little or none for discouragement or fear that the stamina of the race is being undermined, or its continued existence threatened by child labour. The race is *not* deteriorating, even the child of the factory slums is one and one half inches taller and seven pounds heavier than he was thirty years ago. So far as data are available, it seems almost certain that there never was, in any

previous age of the world, as little harmful child labour as in the present one. The magnificent and beneficent series of laws and regulations forbidding harmful child labour which have been placed upon the statute books of all civilized countries and states are simply a living demonstration of an awakened public conscience upon this subject which did not exist before. The evil was present in abundance, but so diffused as to make no pointed appeal to public sentiment, and so universal that it was accepted as a matter of course.

It is gravely to be doubted whether the invention of machinery and consequent development of the factory system, making the labour of children more valuable, since brute strength was no longer required, upon the whole increased either the amount or the harmfulness of child labour. It simply concentrated, and, so to speak, advertised, its evil consequences, just as the poverty, malnutrition, dirt, and disease of a hundred thousand peasants and agricultural labourers when scattered out over a whole country-side or province escape our observation, but horrify us when they are concentrated into four or five acres of a city slum. When children are overworked by the score and by the hundred in factories, in full view of the public, so that streams of their pale faces and stunted forms may be seen pouring out upon the open street, it is only a question of time when the public conscience will

be awakened and the shame forbidden by law. So marked has been this effect that although there is yet abundant room for improvement, taking the civilized world as a whole, the child in the factory, shop, mine and mill is now carefully and fairly efficiently protected by wise, thoughtful and humane laws, leaving as the only unprotected classes the children upon the farm and in the school. To what extent they need protection, not by law, but by the education of public sentiment, is the problem of this chapter.

Our Child Labour organizations have been so gratifyingly successful in their efforts for legislative reform that I believe the time has come for them to turn their attention in this direction as well. The relative magnitude of the problem is easily indicated by a few rough figures. According to the last United States census there were, of children under sixteen years of age in the United States, 650,000 employed in gainful occupations in factory, shop, mill, etc.; 1,100,000 working for wages upon farms; and roughly, 15,000,000 in schools. It is easily seen where the greatest possible menace to the future of the race might fall. If only one per cent. of the children in schools were overworked or overconfined; if only five per cent. of the children employed upon farms, including those working at home, were so injured, it would work more injury to the nation than if twenty per cent. of those employed in shops and

factories were overworked. Or to put it differently: If all the children employed in shops, factories, and mines were injuriously overworked, that would only be the equivalent of the damage done if ten per cent. of the children upon our farms and five per cent. of those in our schools were overworked or overconfined.

That overworking and underfeeding of children upon the farm and overworking and overconfining of children in the school exist, and in no insignificant numbers, few of experience will deny. Most of us who were born or have lived in the country will have little hesitation in testifying that at least ten and probably nearly twenty per cent. of children upon farms are overworked and underfed, from land hunger, traditional ideas of economy, Puritanic notions about discipline and "hardening" and "bearing the yoke in one's youth," or from sheer ignorance and indifference. While there are many admirable and wholesome features about life on a farm, so that it is probably, all things considered, the most wholesome and desirable place for children to grow up, it has also its defects.

Those of us who happen to have been born or raised upon a farm, a *real* farm, run to earn a living and not as a healthful and very expensive amusement, can promptly and feelingly testify that it is not half so rose-coloured as it is usually pictured in literature or through the pearly mists of our boyhood

memories. Farm work is the hardest and most disagreeable work there is, with the longest hours and the poorest pay. Much of it has to be done before daylight or after dark in mud, in snow, in storm and slush. Farm bedrooms are cold and badly ventilated, and the sheer discomfort, verging at times upon agony, of getting out of bed on a winter's morning and starting the fire with damp wood in a kitchen that feels like a cold storage plant in January, and then going out to thaw the pump, shovel a path to the barn, feed the shivering, staring-coated horses, and milk half a dozen frost-rimed cows, is still fresh in our memories. These and a score of similarly cheerful and agreeable memories rise before us like a nightmare. It makes little difference where we may have gone, or what our lot in life, we never have had to do anything so disagreeable since. Moreover, while there is an abundance of food growing upon the farm, that food is raised for sale, and wherever the balance is a narrow one between the income and expenditure, as it is in most of farmers' families, the bulk and the best of that food that will bring a good price in the market is and must be sold, leaving only the poorer quality for home use. In short, the farmer who farms for a living, or who expects to make money, must, in the terse language of the corner grocery, "do all his own work, and live on what he can't sell."

This stern necessity reacts upon the children of the

farm just as it does upon those of the factory town, and the physician in country practice can show you in the remotest and most peaceful country district as severe cases of malnutrition, of rickets, of anemia, of diseases of the joints and the spine, and of stunted development as you can find in a city hospital. There will not be so many of them, but they will be there, nevertheless, except in unusually prosperous and well-to-do neighbourhoods. In the aggregate, I think it would be safe to say that they equal, if they do not far exceed, the defectives and the degenerates of our much smaller slum population. Unquestionably, a large majority of the work done by children upon the farm, being for the most part in the open air, and under the care and protection of their own parents or relatives, is not only not harmful but decidedly beneficial; but we must not shut our eyes to the fact that young children and boys and girls are overworked upon farms, badly fed, and deprived of proper amusement and social and intellectual opportunities to a most undesirable degree, and that this is one of the most potent reasons for the oft-deplored exodus from the farm to the city. When it comes to overworking and underfeeding his children, making home hateful and life one joyless, monotonous grind, a certain class of farmer has no right to throw stones at any factory operative, miner, or even sweat-shop worker. If Mr. Roosevelt's commission on country life will succeed

in reforming or even improving this type of man — you all know him, whose barn is four times as big as his house, and his *real* pets and prides his horses and pigs — it will do as much good as any factory legislation that can be placed upon the statute books.

What of the alternative to child labour, the place to which the child must be sent if he be taken out of the factory — the school. As things stand at present, it is my unwilling judgment that while the factory may become a sweat shop, the average school in the United States to-day is little better than a mental treadmill for the average boy of the working classes after twelve years of age; that the education is so purely formal, so bookish, so lady-like, so irrational and impractical in a word, that it stunts his mind, bewilders his senses and fills him with a dislike for real education and training which warps him mentally as badly as the factory does physically. Many a boy of this class and age, as our antiquated curriculum stands at present, is better off working six hours a day in a well-ventilated, thoroughly sanitary workshop, conducted on kindly and intelligent principles, than he would be in the schoolroom droning and day-dreaming over classical absurdities, in which he can find no interest nor profit. The motto of the school is, "By books ye are saved." But it is a case of "the letter that killeth." In the total, the school is probably doing more physical damage to our children than the factory.

What the boy wants is not books but *life*, not words but *things*, and as matters are arranged at present, he has to leave the schoolroom and go into the factory or the shop to get them. The average schoolroom is preferable to the shop or factory for the working boy or girl after the thirteenth year in but little more than the fact that it protects him from physical overstrain, and its deadening six-hour confinement at hard and uninteresting tasks is a heavy offset to this.

Not only so, but the school curriculum's utter lack of appeal to the working boy of thirteen or more is one of *the principal causes of the rush of child labour into the shop and the factory*. Taking it the world over, the principal cause of harmful child labour is poverty; the stern need of even the pittance that can be earned by the child to enable the rest of the family to live, not unmixed with greed on the part of a certain class of parents, eager to recoup themselves for the expense and trouble of rearing a large family. In European countries the value of the child's earnings to the parents is the principal motive for early work. In this country, however, we are more fortunately situated. Wages are higher, so that the father's income is more often or more nearly adequate to support the entire family, and the average of intelligence and humanity in the parents of the working class is much higher, so that they can see the advantage

of giving their children the best possible start in life.

Statistical investigations of this point appear to have been made only upon a very limited scale. But so far as they have gone they bring out the interesting fact that from fifty to seventy per cent. of the child labour at too early years is due to the initiative *not* of the parent but *of the child.* The causes alleged by the children for their choice were most suggestive; while many of them simply wanted to earn money, to have more to spend, to get on in the world, to buy better clothes, or went to work just because their friends and comrades did, the largest single group gave it as their reason that they were tired of school, that they could not get on at school, that they could not understand their studies, or even, *horrible dictu,* that they got sick at school — they seem to stand confinement of the shop better than that of the schoolroom. In many of these cases the parents were not only perfectly willing for their children to continue at school, but were paying out money for instruction in bookkeeping, shorthand, music, drawing, etc., in addition to letting the children keep their wages. In short, the conclusion, strange as it may seem to many, is almost inevitable that if we would rationalize and modernize the curriculum of our public schools we should cut the foundation from under half if not two thirds of the child labour tendency. In fine, as our most intelli-

gent teachers, our most thoughtful students of pedagogy, our physicians, our sanitarians, our child-labour students, have united for years in declaring, the most vital, the most crying demand before the American Commonwealth to-day is to make our public schools *educate the whole child*, and not merely the expanded bulb at the upper end of him. Train him physically and emotionally as well as mentally. Substitute the playground, the garden, the shop for the book-school. Fit him for life and for action instead of for contemplation and culture; for service instead of superiority; for work, not for display.

THE END

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